Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
Applicant(s): Robert G. Korneluk et al.
Client/Matter No.: 07891/003005
Filing Date: September 1, 2000   Serial No.: 09/654,743
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HUMAN xiap

```
SEQ ID NO:3   1 gaaaggtggacaagtcctaattcaagagaagatgactttaacagtttgaaggatct  60
                -----+----+----+----+----+----+----+----+----+----+----+-
SEQ ID NO:4 a                                                M  T  F  N  S  F  E  G  S

             61 aaaacttgtgtacctgcagacatcaataaggaagaagaatttgtagaagagtttaataga 120
                -----+----+----+----+----+----+----+----+----+----+----+-
          a     K  T  C  V  P  A  D  I  N  K  E  E  F  V  E  E  F  N  R

            121 ttaaaaacttttgctaatttttccaagtggtagtcctgttcagcatcaacactggcacga 180
                -----+----+----+----+----+----+----+----+----+----+----+-
          a     L  K  T  F  A  N  F  P  S  G  S  P  V  S  A  S  T  L  A  R

            181 gcagggtttctttatactggtgaaggagataccgtgcgtgcttagttgtcatgcagct  240
                -----+----+----+----+----+----+----+----+----+----+----+-
          a     A  G  F  L  Y  T  G  E  G  D  T  V  R  C  F  S  C  H  A  A

            241 gtagatagatggcaatatggagactcagcagttggaagacacaggaagtatcccaaat  300
                -----+----+----+----+----+----+----+----+----+----+----+-
          a     V  D  R  W  Q  Y  G  D  S  A  V  G  R  H  R  K  V  S  P  N

            301 tgcagatttatcaacggcttttatcttgaaaatagtgccacgcagtctacaaattctggt 360
                -----+----+----+----+----+----+----+----+----+----+----+-
          a     C  R  F  I  N  G  F  Y  L  E  N  S  A  T  Q  S  T  N  S  G
```

Fig. 1 (page 1 of 7)

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HUMAN xiap

```
361  atccagaatggtcagtacaaagttgaaaactatctgggaagcagagagatcatttgcctta  420
     ----+---------+---------+---------+---------+---------+----+ -
a     I  Q  N  G  Q  Y  K  V  E  N  Y  L  G  S  R  D  H  F  A  L

421  gacaggccatctgagacacatgcagactatctttgagaactgggcaggttgtagatata   480
     ----+---------+---------+---------+---------+---------+----+ -
a     D  R  P  S  E  T  H  A  D  Y  L  L  R  T  G  Q  V  V  D  I

481  tcagacaccatatacccgaggaacctgccatgtattgtgaagaagctagattaaagtcc   540
     ----+---------+---------+---------+---------+---------+----+ -
a     S  D  T  I  Y  P  R  N  P  A  M  Y  C  E  E  A  R  L  K  S

541  tttcgaactggccagactatgctcacctaacccaagagagttagcaagtgctggactc   600
     ----+---------+---------+---------+---------+---------+----+ -
a     F  Q  N  W  P  D  Y  A  H  L  T  P  R  E  L  A  S  A  G  L

601  tactacacaggtattggtgaccaagtgcagtgcttttgtggtgggaaaactgaaaaat   660
     ----+---------+---------+---------+---------+---------+----+ -
a     Y  Y  T  G  I  G  D  Q  V  Q  C  F  C  C  G  G  K  L  K  N

661  tgggaacctttgatcgtgcctggtcagaacacaggcgacacttcctaattgctttcttt   720
     ----+---------+---------+---------+---------+---------+----+ -
a     W  E  P  C  D  R  A  W  S  E  H  R  R  H  F  P  N  C  F  F
```

Fig. 1 (page 2 of 7)

HUMAN xiap

```
721  gtttgggccggaatcttaatattcgaagtgaatctgatgtctgtgagttctgataggaat  780
     ---------+---------+---------+---------+---------+---------+
a     V  L  G  R  N  L  N  I  R  S  E  S  D  A  V  S  S  D  R  N  -

781  ttcccaaattcaacaaatcttccaagaaatccatccatggcagattatgaagcacggatc  840
     ---------+---------+---------+---------+---------+---------+
a     F  P  N  S  T  N  L  P  R  N  P  S  M  A  D  Y  E  A  R  I  -

841  tttactttgggacatggatatactcagttaacaaggagcagcttgcaagagctggattt   900
     ---------+---------+---------+---------+---------+---------+
a     F  F  G  T  W  I  Y  S  V  N  K  E  Q  L  A  R  A  G  F      -

901  tatgctttaggtgaaggtgataaagtaaagtgcttcactgtggaggagggctaactgat   960
     ---------+---------+---------+---------+---------+---------+
a     Y  A  L  G  E  G  D  K  V  K  C  F  H  C  G  G  G  L  T  D  -

961  tggaagcccagtgaagaccctgggaacaacatgctaaatggtatccagggtgcaaatat  1020
     ---------+---------+---------+---------+---------+---------+
a     W  K  P  S  E  D  P  W  E  Q  H  A  K  W  Y  P  G  C  K  Y  -

1021 ctgttagaacagaagggacaagaatataaacaatattcattaacttcattcacttgag   1080
     ---------+---------+---------+---------+---------+---------+
a     L  L  E  Q  K  G  Q  E  Y  I  N  N  H  L  T  H  S  L  E     -
```

Fig. 1 (page 3 of 7)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES …
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HUMAN xiap

```
1081  gagtgtctggtaagaactactgagaaacaccatcactaactagaagaattgatgatacc  1140
      --------+---------+---------+---------+---------+---------+
       E  C  L  V  R  T  T  E  K  T  P  S  L  T  R  R  I  D  D  T  -

1141  atcttccaaaatcctatggtacaagaagctatacgaatggggttcagtttcaaggacatt  1200
      --------+---------+---------+---------+---------+---------+
       I  F  Q  N  P  M  V  Q  E  A  I  R  M  G  F  S  F  K  D  I  -

1201  aagaaaataatggaggaaaaattcagatatctgggagcaactaaatcacttgaggtt  1260
      --------+---------+---------+---------+---------+---------+
       K  K  I  M  E  E  K  I  Q  I  S  G  S  N  Y  K  S  L  E  V  -

1261  ctggttgcagatctagtgaatgctcagaaagacagtatgcaagatgagtcagtcagact  1320
      --------+---------+---------+---------+---------+---------+
       L  V  A  D  L  V  N  A  Q  K  D  S  M  Q  D  E  S  S  Q  T  -

1321  tcattacagaagagagattagtactgaagagcagctaaggcgcctgcaagaggagaagctt  1380
      --------+---------+---------+---------+---------+---------+
       S  L  Q  K  E  I  S  T  E  E  Q  L  R  R  L  Q  E  E  K  L  -

1381  tgcaaatctgtatggatagaaatattgctatcgttttgttccttgtggacatctctagtc  1440
      --------+---------+---------+---------+---------+---------+
```

Fig. 1 (page 4 of 7)

HUMAN xiap

```
       C  K I C M D R N I A I V F V P C G H L V  -
1441  acttgtaaacaatgtgctgatgcagttgacaagtgtcccatgtgctacacagtcattact
      --+---------+---------+---------+---------+---------+  1500

       T C K Q C A E A V D K C P M C Y T V I T  -
1501  ttcaagcaaaaattttatgtcttaactctatagtaggcatgttatgtgttct
      --+---------+---------+---------+---------+---------+  1560

       F K Q I F M S *  -
1561  tattaccctgattgaatgtgtgaactgactttaagtaatcaggattgaattccat
      --+---------+---------+---------+---------+---------+  1620

1621  tagcatttgctaccaagtaggaaaaaaatgtacatggcagtgttttagttggcaatata
      --+---------+---------+---------+---------+---------+  1680

1681  atctttgaatttcttgattttcaggtattagctgtattatccattttttactgtta
      --+---------+---------+---------+---------+---------+  1740

1741  tttaattgaaaccatagactaagaataagaagcatcatactataactgaacacaatgtgt
      --+---------+---------+---------+---------+---------+  1800
```

Fig. 1 (page 5 of 7)

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HUMAN xiap

```
1801  attcatagtatactgatttaatttctaagtgtaagtgaattaatcatctgattttttat  1860
      ---------+---------+---------+---------+---------+---------+

1861  tcttttcagatagggcttaacaaatggagctttctgtatataaatgtggagattagagtta  1920
      ---------+---------+---------+---------+---------+---------+

1921  atctccccaatcacataatttgttttgtgtgaaaaaggaataaattgttccatgctggtg  1980
      ---------+---------+---------+---------+---------+---------+

1981  gaaagatagagagattgtttttagaggttggttgttgtgtttaggattctgtccattttct  2040
      ---------+---------+---------+---------+---------+---------+

2041  tgtaaagnnataaacacgnacntgtgcgaaatatnttgtaaagtgattgccattnttg  2100
      ---------+---------+---------+---------+---------+---------+

2101  aaagcgtatttaatgatagaatactatcgagccaacatgtactgacatggaaagatgtca  2160
      ---------+---------+---------+---------+---------+---------+
```

Fig. 1 (page 6 of 7)

HUMAN xiap

```
2161  nagatatgtgttaagtgtgtaaatgcaagtggcnnnacactatgtgtaagtctgagccagatca
      ---------+---------+---------+---------+---------+---------+ 2220
a

2221  aagtatgtgtatgttnttaatatgcatagaacnanagatttggaaagatatacaccaaactg
      ---------+---------+---------+---------+---------+---------+ 2280
a

2281  ttaaatgtggttctctcttcggggagggggggattggggagggggcccagagggggtttta
      ---------+---------+---------+---------+---------+---------+ 2340
a

2341  nagggcccttttcactttcnactttttcatttttgttctgttcgnatttttttataagtat
      ---------+---------+---------+---------+---------+---------+ 2400
a

2401  gtanaccccnaagggtttatggnaactaacatcagtaacccccgtgactatcct
      ---------+---------+---------+---------+---------+---------+ 2460
a

2461  gtnctcttcctagggagctgtnttgttcccacccaccaccccttccctctgaacaaatgc
      ---------+---------+---------+---------+---------+---------+ 2520
a

2521  ctgagtgctggggcactttn
      ---------+------ 2540
a
```

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Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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HUMAN hiap-1

SEQ ID NO:5

```
 1  c  TCCTTGAGAGATGTATCAGTAGTATAGGATTTAGGATCTCCATGTTGGAACTCTAAATGCATAGA  60
        ---+---+---+---+---+---+---+---+---+---+---+---+  -

61  c  AATGGAAATAATGGAAATTTTCATTTTGGCTTTTCAGCCTAGTATTAAAACTGATAAAA  120
        ---+---+---+---+---+---+---+---+---+---+---+---+  -

121 c  GCAAAGCCATGCACAAAACTACCTCCCTAGAGAAAGGCTAGTCCCTTTCTTCCCCATTC  180
        ---+---+---+---+---+---+---+---+---+---+---+---+  -

181 c  ATTTCATTATGAACATAGTAGAAAACAGCATATTCTTATCAAATTTGATGAAAGCGCCA  240
        ---+---+---+---+---+---+---+---+---+---+---+---+  -
```

SEQ ID NO:6

```
241 c  ACACGTTTGAACTGAAAATACGACTTGTCATGTGAACTGTACCGAATGTCTACGTATTCCA  300
        ---+---+---+---+---+---+---+---+---+---+---+---+  -
        T  F  E  L  K  Y  D  L  S  C  E  L  Y  R  M  S  T  Y  S  T  -

301 c  CTTTTCCTGCTGGGGGTTCCTGTCTCAGAAAGGAGTCTTGCTCGTGCTGGTTTCTATTACA  360
        ---+---+---+---+---+---+---+---+---+---+---+---+  -
        F  P  A  G  V  P  V  S  E  R  S  L  A  R  A  G  F  Y  Y  T  -
```

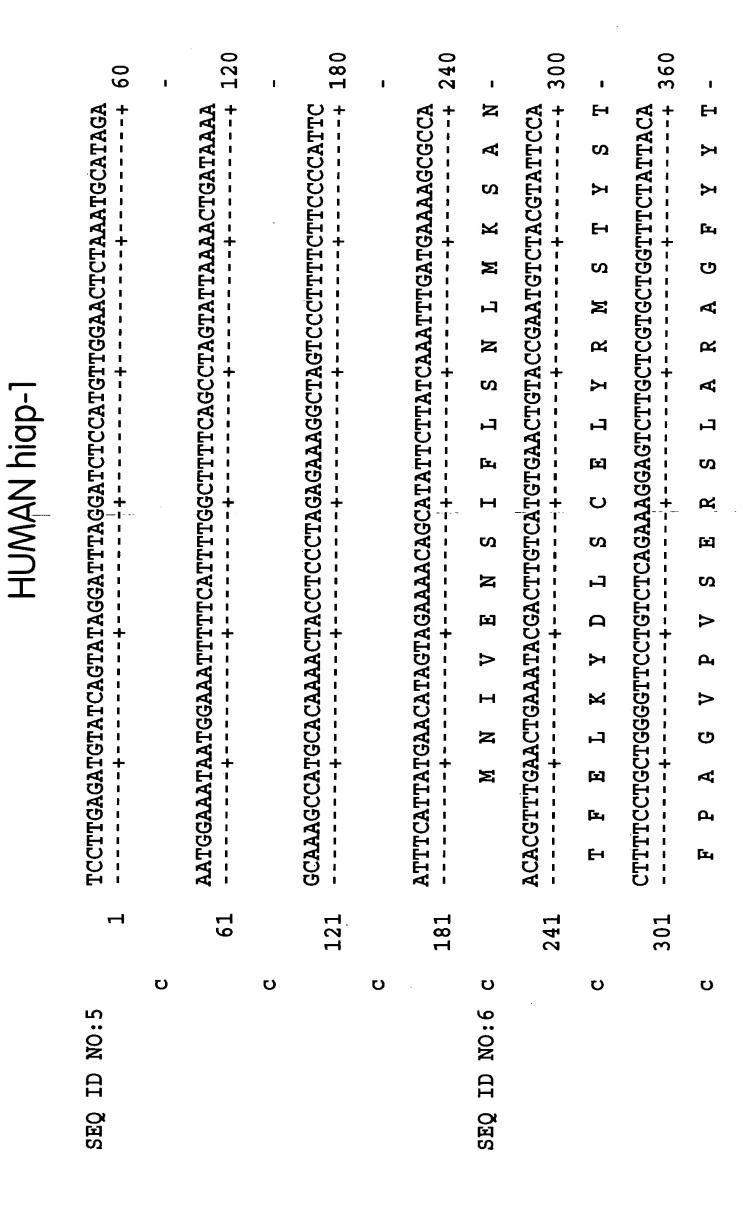M N I V E N S I F L S N L M K S A N -

Fig. 2 (page 1 of 8)

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HUMAN hiap-1

```
361  CTGGTGTGAATGACAAGGTCAAAATGCTTCTGTTGTGGCCTGATGCTGGATAACTGGAAAA  420
     ---+---+---+---+---+---+
  C   G   V   N   D   K   V   K   C   F   C   C   G   L   M   L   D   N   W   K   R   -

421  GAGGAGACAGTCCTACTGAAAAGCATAAAAAGTTGTATCCTAGCTGCAGATTCGTTCAGA  480
     ---+---+---+---+---+---+
  C   G   D   S   P   T   E   K   H   K   K   L   Y   P   S   C   R   F   V   Q   S   -

481  GTCTAAAATTCCGTTAACAACTTGGAAGCTACCTCTCCAGCCTACTTTCCTTCTTCAGTAA  540
     ---+---+---+---+---+---+
  C   L   N   S   V   N   N   L   E   A   T   S   Q   P   T   F   P   S   S   V   T   -

541  CACATTCCACACACTCATTACTTCCGGGTACAGAAAAACAGTGGATATTCCGTGGCTCTT  600
     ---+---+---+---+---+---+
  C   H   S   T   H   S   L   L   P   G   T   E   N   S   G   Y   F   R   G   S   Y   -

601  ATTCAAACTCTCCATCAAATCCTGTAAACTCCAGAGCAAATCAAGAATTTCTGCCTTGA  660
     ---+---+---+---+---+---+
  C   S   N   S   P   S   N   P   V   N   S   R   A   N   Q   E   F   S   A   L   M   -

661  TGAGAAGTTCCTACCCCTGTCCAATGAATAACGAAAATGCCAGATTACTTACTTTTCAGA  720
     ---+---+---+---+---+---+
  C   R   S   S   Y   P   C   P   M   N   N   E   N   A   R   L   L   T   F   Q   T   -
```

Fig. 2 (page 2 of 8)

HUMAN hiap-1

```
721  CATGGCCATTGACTTTTCTGTCGCCAACAGATCTGGCCACGAGCAGGCTTTTACTACATAG  780
     ---------+---------+---------+---------+---------+---------+ -
      W  P  L  T  F  L  S  P  T  D  L  A  R  A  G  F  Y  Y  I  G  -

781  GACCTGGAGACAGAGTGGCTTGCCTTTGCCTGTGGTGGAAAATTGAGCAATTGGGAACCGA  840
     ---------+---------+---------+---------+---------+---------+ -
      P  G  D  R  V  A  C  F  A  C  G  G  K  L  S  N  W  E  P  K  -

841  AGGATAATGCTATGTCAGAACACCTGAGACATTTTCCCAAATGCCCATTATAGAAAATC   900
     ---------+---------+---------+---------+---------+---------+ -
      D  N  A  M  S  E  H  L  R  H  F  P  K  C  P  F  I  E  N  Q  -

901  AGCTTCAAGAGACTTCAAGATACACAGTTTCTAATCTGAGCATGCAGACACATGCAGCCC   960
     ---------+---------+---------+---------+---------+---------+ -
      L  Q  D  T  S  R  Y  T  V  S  N  L  S  M  Q  T  H  A  A  R  -

961  GCTTTAAAACATTCTTTAACTGGCCCCTCTAGTGTTCTAGTTAATCCTGAGCAGCTTGCAA  1020
     ---------+---------+---------+---------+---------+---------+ -
      F  K  F  F  N  W  P  S  S  V  L  V  N  P  E  Q  L  A  S  -

1021 GTGCGGGGTTTTTATTATGTGGGTAACAGTGATGATGTCAAATGCTTTTGCTGTGATGGTG  1080
     ---------+---------+---------+---------+---------+---------+ -
      A  G  F  Y  Y  V  G  N  S  D  D  V  K  C  F  C  C  D  G  G  -
```

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HUMAN hiap-1

```
1081  GACTCAGGTGTTGGGAATCTGGAGATGATCCATGGGTTCAACATGCCAAGTGGTTCCAA  1140
      ---------+---------+---------+---------+---------+---------+
       L  R  C  W  E  S  G  D  D  P  W  V  Q  H  A  K  W  F  P  R  -

1141  GGTGTGAGTACTTGATAAGAATTAAAGGACAGGAGTTCATCCGTCAAGTTCAAGCCAGTT  1200
      ---------+---------+---------+---------+---------+---------+
       C  E  Y  L  I  R  K  G  Q  E  F  I  R  Q  V  Q  A  S  Y  -

1201  ACCCTCATCTACTTGAACAGCTGCTATCCACATCAGCAGCCCAGGAGATGAAAATGCAG  1260
      ---------+---------+---------+---------+---------+---------+
       P  H  L  E  Q  L  L  S  T  S  D  S  P  G  D  E  N  A  E  -

1261  AGTCATCAATTATCCATTTGGAACCTGGAGAAGACCATTCAGAAGATGCAATCATGATGA  1320
      ---------+---------+---------+---------+---------+---------+
       S  S  I  I  H  L  E  P  G  E  D  H  S  E  D  A  I  M  M  N  -

1321  ATACTCCTGTGATTAATGCTGCCGTGGAAATGGGCTTTAGTAGAAGCCTGGTAAAACAGA  1380
      ---------+---------+---------+---------+---------+---------+
       T  P  V  I  N  A  A  V  E  M  G  F  S  R  S  L  V  K  Q  T  -

1381  CAGTTCAGAGAAAAATCCTAGCAACTGGAGAGAATTATAGACTAGTCAATGATCTTGTGT  1440
      ---------+---------+---------+---------+---------+---------+
       V  Q  R  K  I  L  A  T  G  E  N  Y  R  L  V  N  D  L  V  L  -
```

c

c

c

c

c

c

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HUMAN hiap-1

```
1441  TAGACTTACTCAATGCAGAAGATGAAATAAGGAAGGAGAGAGAGAAAGAGCAACTGAGG  1500
      ----------+---------+---------+---------+---------+---------+
        D  L  N  A  E  D  E  I  R  E  E  E  R  E  R  A  T  E  E  -

1501  AAAAAGAATCAAATGATTTATTATTAAATCCGGAAGAATAGAATGGCACTTTTTCAACATT  1560
      ----------+---------+---------+---------+---------+---------+
        K  E  S  N  D  L  L  I  R  K  N  R  M  A  L  F  Q  H  L  -

1561  TGACTTGTGTAATTCCAATCCCTGGATAGTCTACTAACTGCCGGAATTATTAATGAACAAG  1620
      ----------+---------+---------+---------+---------+---------+
        T  C  V  I  P  I  L  D  S  L  L  T  A  G  I  N  E  Q  E  -

1621  AACATGATGTTATTAAACAGAAGACACAGACGTCTTTACAAGCAAGAGAACTGATTGATA  1680
      ----------+---------+---------+---------+---------+---------+
        H  D  V  I  K  Q  K  T  Q  T  S  L  Q  A  R  E  L  I  D  T  -

1681  CGATTTTAGTAAAAGGAAATATTGCAGCCACTGTATTCAGAAACTCTCTGCAAGAAGCTG  1740
      ----------+---------+---------+---------+---------+---------+
        I  L  V  K  G  N  I  A  A  T  V  F  R  N  S  L  Q  E  A  E  -

1741  AAGCTGTGTTATATGAGCATTTATTTGTGCAACAGCACATAAAATATATTCCCACAGAAG  1800
      ----------+---------+---------+---------+---------+---------+
        A  V  L  Y  E  H  L  F  V  Q  Q  D  I  K  Y  I  P  T  E  D  -
```

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HUMAN hiap-1

```
1801  ATGTTTCAGATCTACCAGTGGAAGAACAATTGCGGAGACTACCAGAAGAAAGAACATGTA  1860
      ----:----:----:----:----:----:----:----:----:----:----:----:
         V  S  D  L  P  V  E  E  Q  L  R  R  L  P  E  E  R  T  C  K

1861  AAGTGTGTATGGACAAAGAAGTGTCCATAGTGTTTATTCCTTGTGGTCATCTAGTAGTAT  1920
      ----:----:----:----:----:----:----:----:----:----:----:----:
         V  C  M  D  K  E  V  S  I  V  F  I  P  C  G  H  L  V  V  C

1921  GCAAAGATTGTGCTCCTTCTTTAAGAAAGTGTCCTATTTGTAGGAGTACAATCAAGGGTA  1980
      ----:----:----:----:----:----:----:----:----:----:----:----:
         K  D  C  A  P  S  L  R  K  C  P  I  C  R  S  T  I  K  G  T

1981  CAGTTCGTACATTTCTTTCATGAAGAAGAACCAAAACATCGTCTAAACTTTAGAATTAAT  2040
      ----:----:----:----:----:----:----:----:----:----:----:----:
         V  R  T  F  L  S  *

2041  TTATTAAATGTATTATTATAACTTTTAACTTTTATCCTAATTTGGTTCCTTAAAATTTTATT  2100
      ----:----:----:----:----:----:----:----:----:----:----:----:

2101  TATTTACAACTCAAAAAACATTGTTTGTGTAACATATTTTATATATGTATCTAAACCATA  2160
      ----:----:----:----:----:----:----:----:----:----:----:----:
```

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HUMAN hiap-1

```
2161  TGAACATATATTTTTAGAAACTAAGAGAATGATAGGCTTTTGTTCTTATGAACGAAAAA
      ----------+---------+---------+---------+---------+---------+  2220
                                                                    -

2221  GAGGTAGCACTACAAACACAATATTCAATCCAAATTTCAGCATTATTGAAATTGTAAGTG
      ----------+---------+---------+---------+---------+---------+  2280
                                                                    -

2281  AAGTAAAAACTTAAGAGATATTTGAGTTAACCTTTAAGAATTTTAAATATTTTGGCATTGTAC
      ----------+---------+---------+---------+---------+---------+  2340
                                                                    -

2341  TAATACCGGGAACATGAAGCCAGGTGTGGTGGTATGTACCTGTAGTCCCAGGCTGAGGCA
      ----------+---------+---------+---------+---------+---------+  2400
                                                                    -

2401  AGAGAATTACTTGAGCCCAGGAGTTTGAATCCATCCTGGGCAGCATACTGAGACCCCTGCC
      ----------+---------+---------+---------+---------+---------+  2460
                                                                    -

2461  TTTAAAAACXAACAGXAACCAAAXCCAAACACCAGGGACACATTTCTCTGTCTTTTTGAT
      ----------+---------+---------+---------+---------+---------+  2520
                                                                    -
```

C

C

C

C

C

C

Fig. 2 (page 7 of 8)

15/61

HUMAN hiap-1

```
2521 CAGTGTCCTATACATCGAAGGTGTGCATATATGTTGAATCACATTTTAGGGACATGGTGT
     ---+----+----+----+----+----+----+----+----+----+----+----+ 2580
                                                                -

2581 TTTTATAAAGAATTCTGTGAGXAAAAATTTAATAAAGCAACCXAAATTACTCTTAAAAAA
     ---+----+----+----+----+----+----+----+----+----+----+----+ 2640
                                                                -

2641 AAAAAAAAAAAAAACTCGAGGGGCCCGTACCAAT
     ---+----+----+----+----+------- 2676
                                      -
```

Fig. 2 (page 8 of 8)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
Applicant(s): Robert G. Korneluk et al.
Client/Matter No.: 07891/003005
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HUMAN hiap-2

SEQ ID NO:7

```
1    TTAGGTTACCTGAAAGAGTTACTACAACCCCAAAGAGTTGTGTTCTAAGTAGTATCTTGG   60
     ----+----+----+----+----+----+----+----+----+----+----+----+
a

61   TAATTCAGAGAGATACTCATCCTACCTGAATATAAACTGAGATAAATCCAGTAAAGAAAG   120
     ----+----+----+----+----+----+----+----+----+----+----+----+
a

121  TGTAGTAAATTCTACATAAGAGTCTATCATTGATTTCTTTTGTGGTGGAAATCTTAGTT    180
     ----+----+----+----+----+----+----+----+----+----+----+----+
a

181  CATGTGAAGAAATTTCATGTGAATGTTTTAGCTATCAAACAGTACTGTCACCTACTCATG   240
     ----+----+----+----+----+----+----+----+----+----+----+----+
a                                                              M

241  CACAAAACTGCCTCCCAAAGACTTTCCCAGTCCCCTCGTATCAAAACATTAAGAGTATA    300
     ----+----+----+----+----+----+----+----+----+----+----+----+
a     H  K  T  A  S  Q  R  L  F  P  G  P  S  Y  Q  N  I  K  S  I
```

SEQ ID NO:8

```
301  ATGGAAGATAGCACGATCTTGTCAGATTGGACAAACAGCAACAAAAATGAAGTAT       360
     ----+----+----+----+----+----+----+----+----+----+----+----+
a     M  E  D  S  T  I  L  S  D  W  T  N  S  N  K  Q  K  M  K  Y
```

Fig. 3 (page 1 of 7)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
Applicant(s): Robert G. Korneluk et al.
Client/Matter No.: 07891/003005
Filing Date: September 1, 2000   Serial No.: 09/654,743
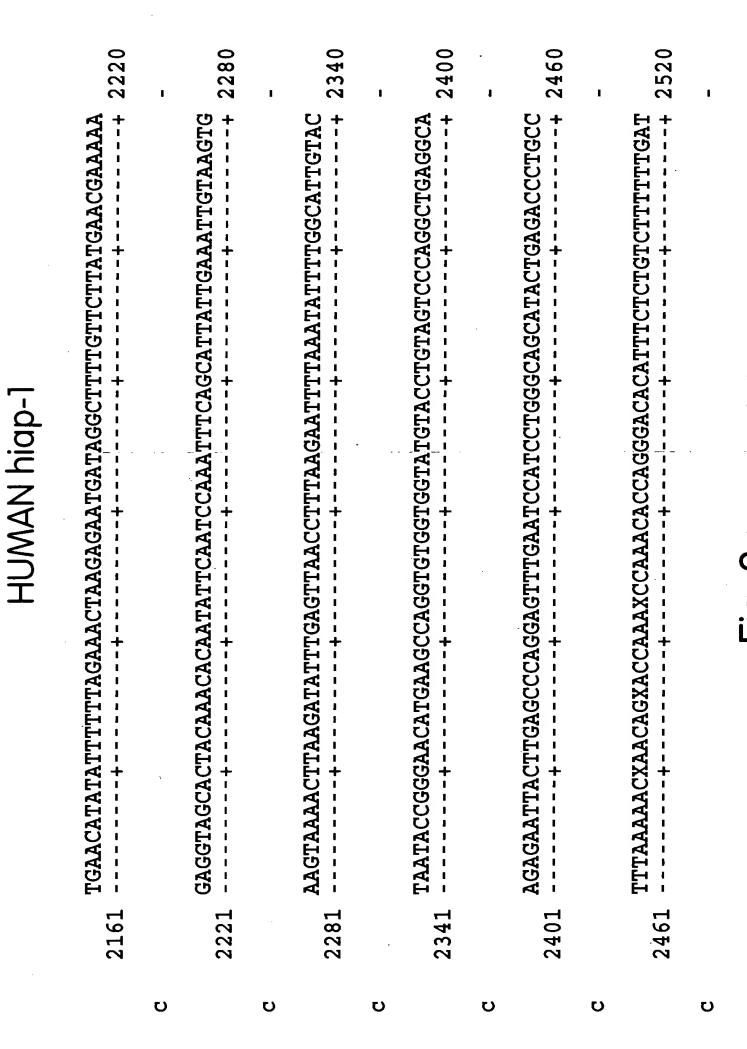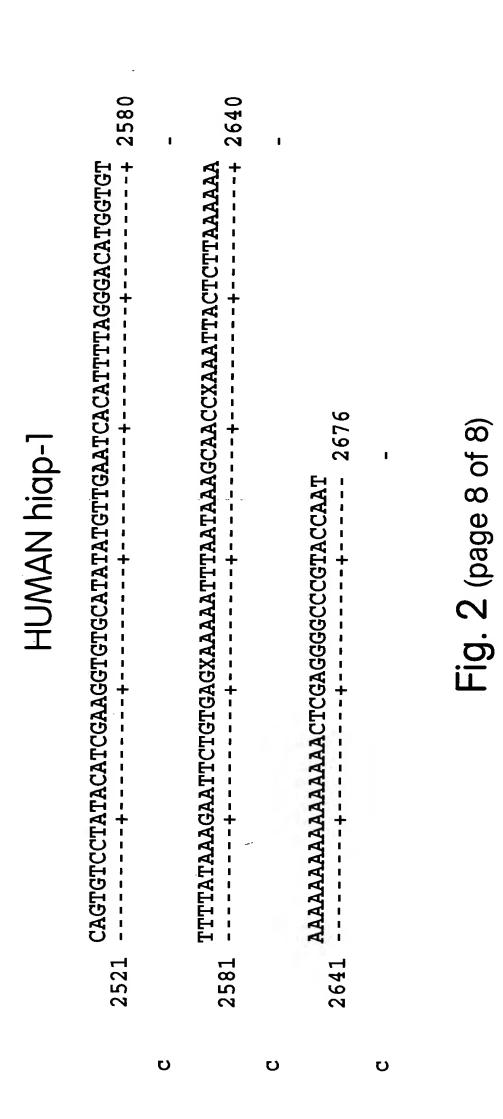Page /7 of 61   Customer No.: 21559

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HUMAN hiap-2

```
361  GACTTTTCCTGTGTGAACTCTACAGAATGTCTACACATATTCAACTTTCCCGCCGGGGGTGCCT  420
     ---------+---------+---------+---------+---------+---------+
     CTGAAAAGGACACTTGAGATGTCTTACAGATGTGTATAAGTTGAAAGGGCGGCCCCACGGA
      D   F   S   C   E   L   Y   R   M   S   T   Y   S   T   F   P   A   G   V   P   -

421  GTCTCAGAAAGGAGTCTTGCTCGTGCTGGTTTTTATTATACTGGTGTGAATGACAAGGTC  480
     ---------+---------+---------+---------+---------+---------+
     CAGAGTCTTTCCTCAGAACGAGCACGACCAAAAATAATATGACCACACTTACTGTTCCAG
      V   S   E   R   S   L   A   R   A   G   F   Y   Y   T   G   V   N   D   K   V   -

481  AAATGCTTCTGTTGTGGCCTGATGCTGGATAACTGGAAACTAGGAGACAGTCCTATTCAA  540
     ---------+---------+---------+---------+---------+---------+
     TTTACGAAGACAACACCGGACTACGACCTATTGACCTTTGATCCTCTGTCAGGATAAGTT
      K   C   F   C   C   G   L   M   L   D   N   W   K   L   G   D   S   P   I   Q   -

541  AAGCATAAACAGCTATATCCTAGCTGTGTAGCTTTATTCAGAATCTGGTTTCAGCTAGTCTG  600
     ---------+---------+---------+---------+---------+---------+
     TTCGTATTTGTCGATATAGGATCGACATCGAAATAAGTCTTAGACCAAAGTCGATCAGAC
      K   H   K   Q   L   Y   P   S   C   S   F   I   Q   N   L   V   S   A   S   L   -

601  GGATCCACCTCTAAGAATACGTCTCCAATGAGAAACAGTTTTGCACATTCATTATCTCCC  660
     ---------+---------+---------+---------+---------+---------+
     CCTAGGTGGAGATTCTTATGCAGAGGTTACTCTTTGTCAAAACGTGTAAGTAATAGAGGG
      G   S   T   S   K   N   T   S   P   M   R   N   S   F   A   H   S   L   S   P   -

661  ACCTTGGAACATAGTAGCTTGTTCAGTGGTTCTTACTCCAGCCTTCCTCCAAACCCTCTT  720
     ---------+---------+---------+---------+---------+---------+
     TGGAACCTTGTATCATCGAACAAGTCACCAAGAATGAGGTCGGAAGGAGGTTTGGGAGAA
      T   L   E   H   S   S   L   F   S   G   S   Y   S   S   L   P   P   N   P   L   -
```

a

a

a

a

a

a

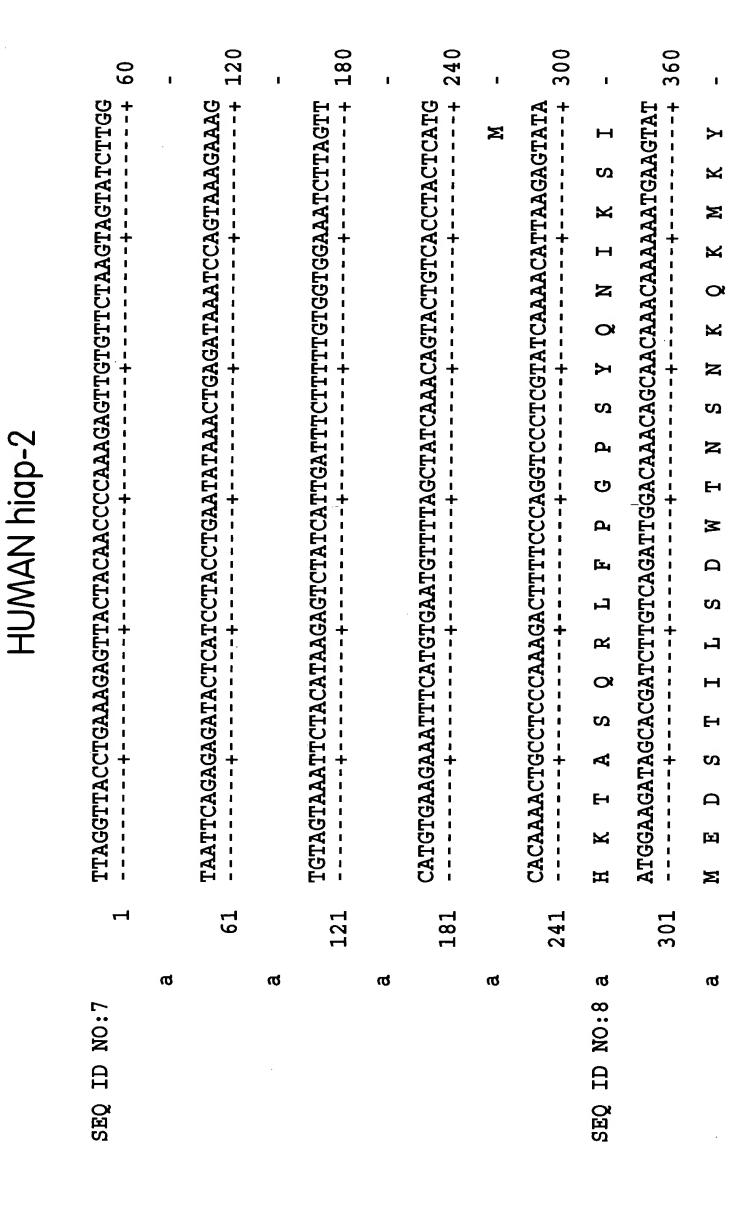## Fig. 3 (page 2 of 7)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
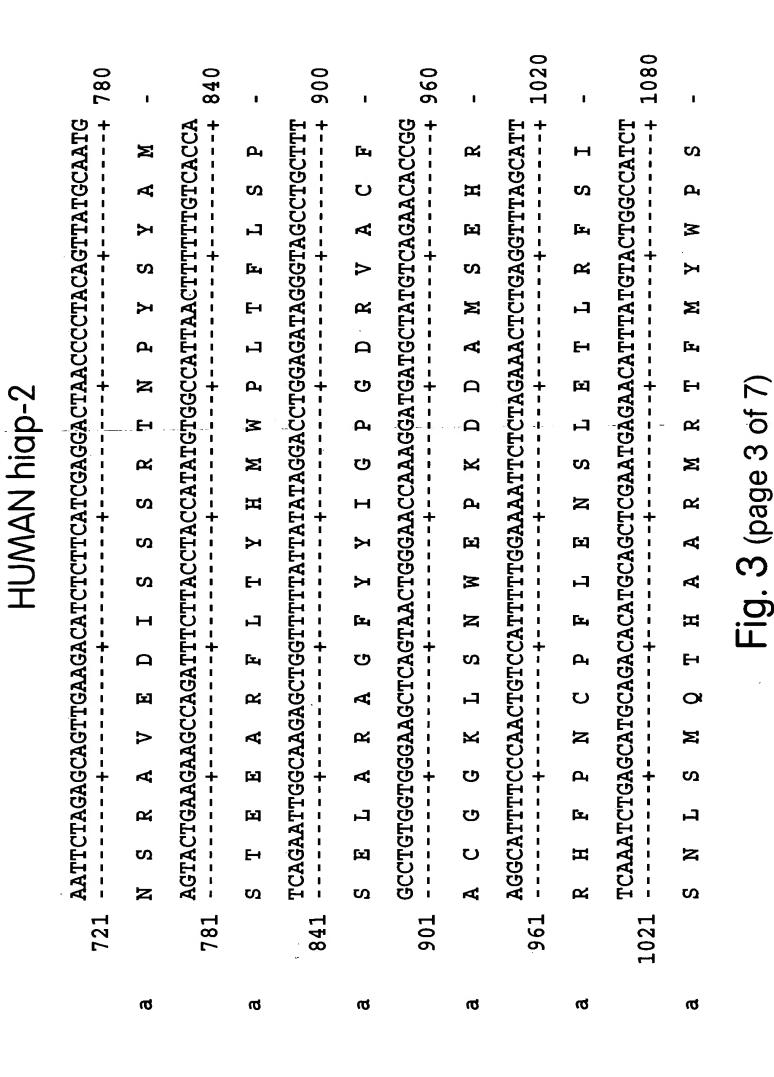Applicant(s): Robert G. Korneluk et al.
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HUMAN hiap-2

```
721  AATTCTAGAGCAGTTGAAGACATCTCTTCATGAGGACTAACCCCTACAGTTATGCAATG  780
     ----+---------+---------+---------+---------+---------+----
 a   N  S  R  A  V  E  D  I  S  S  S  R  T  N  P  Y  S  Y  A  M  -

781  AGTACTGAAGAAGCCAGATTTCTTACCTACCATATGTGGCCATTAACTTTTTGTCACCA  840
     ----+---------+---------+---------+---------+---------+----
 a   S  T  E  E  A  R  F  L  T  Y  H  M  W  P  L  T  F  L  S  P  -

841  TCAGAATTGGCAAGAGCTGGTTTTTATTATATAGGACCTGGAGATAGGGTAGCCTGCTTT  900
     ----+---------+---------+---------+---------+---------+----
 a   S  E  L  A  R  A  G  F  Y  Y  I  G  P  G  D  R  V  A  C  F  -

901  GCCTGTGGTGGGAAGCTCAGTAACTGGGAACCAAAGGATGATGCTATGTCAGAACACCGG  960
     ----+---------+---------+---------+---------+---------+----
 a   A  C  G  G  K  L  S  N  W  E  P  K  D  D  A  M  S  E  H  R  -

961  AGGCATTTCCCAACTGTCCATTTTTGGAAAATTCTCTAGAAACTCTGAGGTTTAGCATT  1020
     ----+---------+---------+---------+---------+---------+----
 a   R  H  F  P  N  C  P  F  L  E  N  S  L  E  T  L  R  F  S  I  -

1021 TCAAATCTGAGCATGCAGACACACATGCAGCTCGAATGAGAACATTTATGTACTGGCCATCT  1080
     ----+---------+---------+---------+---------+---------+----
 a   S  N  L  S  M  Q  T  H  A  A  R  M  R  T  F  M  Y  W  P  S  -
```

Fig. 3 (page 3 of 7)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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HUMAN hiap-2

```
1081 AGTGTTCCAGTTCAGCCTGAGCAGCTTGCAAGTGCTGGTTTTATTATGTGGGTCGCAAT 1140
     ----:----+----:----+----:----+----:----+----:----+----:----+ -
       S    V    P    V    Q    P    E    Q    L    A    S    A    G    F    Y    Y    V    G    R    N

1141 GATGATGTCAAATGCTTTGGTTGTGATGGTGGCTTGAGGTGTTGGGAATCTGGAGATGAT 1200
     ----:----+----:----+----:----+----:----+----:----+----:----+ -
       D    D    V    K    C    F    G    C    D    G    G    L    R    C    W    E    S    G    D    D

1201 CCATGGGTAGAACATGCCAAGTGGTTTCCAAGGTGTGAGTTCTTGATACGAATGAAAGGC 1260
     ----:----+----:----+----:----+----:----+----:----+----:----+ -
       P    W    V    E    H    A    K    W    F    P    R    C    E    F    L    I    R    M    K    G

1261 CAAGAGTTTGTTGATGAGATTCAAGGTAGATATCCCTCATCTTCTTGAACAGCTGTTGTCA 1320
     ----:----+----:----+----:----+----:----+----:----+----:----+ -
       Q    E    F    V    D    E    I    Q    G    R    Y    P    H    L    L    E    Q    L    L    S

1321 ACTTCAGATACCACTGGAGAAGAAAATGCTGACCCACCAATTATTCATTTGGACCTGGA 1380
     ----:----+----:----+----:----+----:----+----:----+----:----+ -
       T    S    D    T    T    G    E    E    N    A    D    P    P    I    H    F    G    P    G

1381 GAAAGTTCTTCAGAAGATGCTGTCATGATGAATACACCTGTGTTAAATCTGCCTTGGAA 1440
     ----:----+----:----+----:----+----:----+----:----+----:----+ -
       E    S    S    E    D    A    V    M    M    N    T    P    V    V    K    S    A    L    E
```

Fig. 3 (page 4 of 7)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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HUMAN hiap-2

```
1441  ATGGGCTTTAATAGAGACCTGGTGAAACAAACAGTTCTAAGTAAAATCCTGACAACTGGA  1500
      ----------+---------+---------+---------+---------+---------+
a     M  G  F  N  R  D  L  V  K  Q  T  V  L  S  K  I  L  T  T  G   -

1501  GAGAACTATAAAAACAGTTAATGATATTGTGTCAGCACTTCTTAATGCTGAAGATGAAAAA  1560
      ----------+---------+---------+---------+---------+---------+
a     E  N  Y  K  T  V  N  D  I  V  S  A  L  L  N  A  E  D  E  K   -

1561  AGAGAAGAGGAGAAGGAAAAACAAGCTGAAGAAATGGCATCAGATGATTTGTCATTAATT  1620
      ----------+---------+---------+---------+---------+---------+
a     R  E  E  E  K  Q  A  E  E  M  A  S  D  D  L  S  L  I         -

1621  CGGAAGAACAGAATGGCTCTCTTTCAACAATTGACATGTGTGCTTCCTATCCTGGATAAT  1680
      ----------+---------+---------+---------+---------+---------+
a     R  K  N  R  M  A  L  F  Q  Q  L  T  C  V  L  P  I  L  D  N   -

1681  CTTTTAAAGGCCAATGTAATTAATAAACAGGAACATGATATTATTAAACAAAAACACAG  1740
      ----------+---------+---------+---------+---------+---------+
a     L  L  K  A  N  V  I  N  K  Q  E  H  D  I  K  Q  K  T  Q      -

1741  ATACCTTTACAAGCGAGAGAACTGATTGATACCATTTGGGTTAAAGGAAATGCTGCGGCC  1800
      ----------+---------+---------+---------+---------+---------+
a     I  P  L  Q  A  R  E  L  I  D  T  I  W  V  K  G  N  A  A  A   -
```

Fig. 3 (page 5 of 7)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
Applicant(s): Robert G. Korneluk et al.
Client/Matter No.: 07891/003005
Filing Date: September 1, 2000   Serial No.: 09/654,743
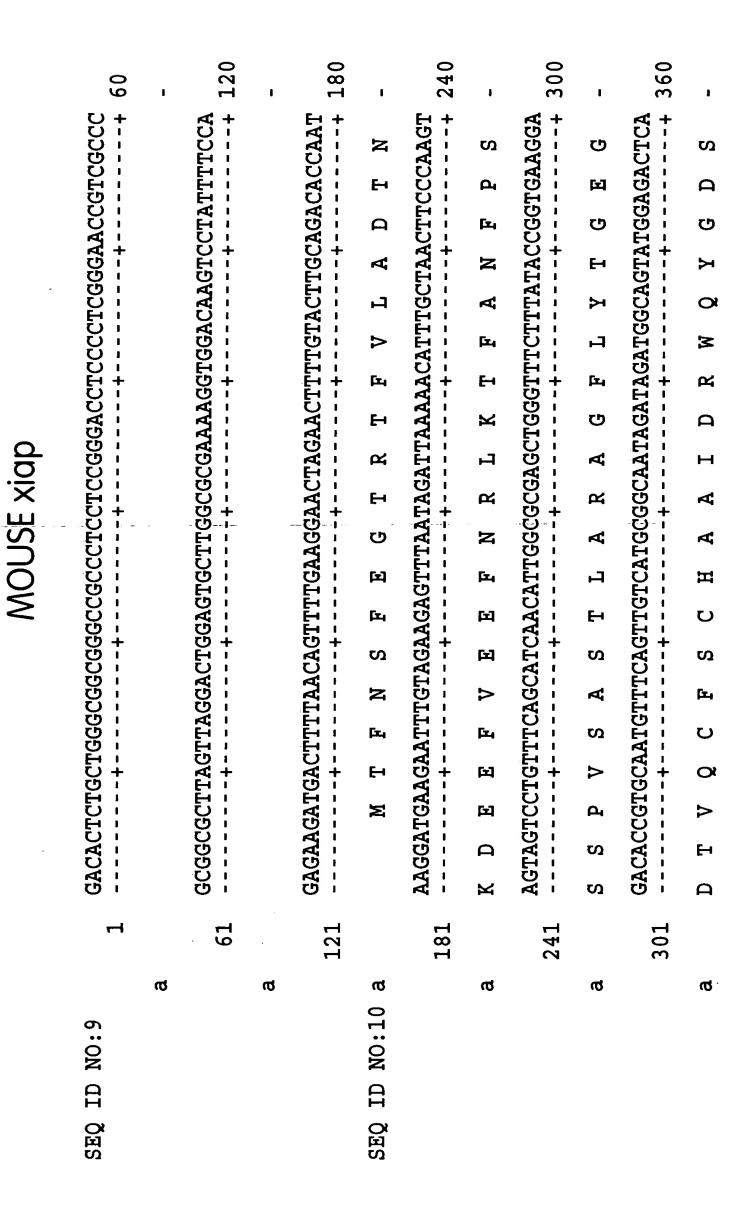Page 21 of 61   Customer No.: 21559

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HUMAN hiap-2

```
1801  AACATCTTCAAAAACTGTCTAAAAGAAATTGACTCTACATTGTATAAGAACTTATTTGTG  1860
      -----+---------+---------+---------+---------+---------+  -
a      N  I  F  K  N  C  L  K  E  I  D  S  T  L  Y  K  N  L  F  V

1861  GATAAGAATATGAAGTATATTCCAACAGAAGATGTTTCAGGTCTGTCACTGGAAGAACAA  1920
      -----+---------+---------+---------+---------+---------+  -
a      D  K  N  M  K  Y  I  P  T  E  D  V  S  G  L  S  L  E  E  Q

1921  TTGAGGAGGTTGCAAGAAGAACGAACTTGTAAAGTGTGTATGGACAAAGAAGTTTCTGTT  1980
      -----+---------+---------+---------+---------+---------+  -
a      L  R  R  L  Q  E  E  R  T  C  K  V  C  M  D  K  E  V  S  V

1981  GTATTTATTCCTTGTGGTCATCTGGTAGTATGCCAGGAATGTGCCCCTTCTCTAAGAAAA  2040
      -----+---------+---------+---------+---------+---------+  -
a      V  F  I  P  C  G  H  L  V  V  C  Q  E  C  A  P  S  L  R  K

2041  TGCCCCTATTTGCAGGGGTATAATCAAGGGTACTGTTCGTACATTCTCTCTTAAAGAAAA  2100
      -----+---------+---------+---------+---------+---------+  -
a      C  P  I  C  R  G  I  I  K  G  T  V  R  T  F  L  S  *

2101  ATAGTCTATATTTAACCTGCATAAAAAGGTCTTTAAAATATTGTTGAACACTTGAAGCC  2160
      -----+---------+---------+---------+---------+---------+  -
a
```

Fig. 3 (page 6 of 7)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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HUMAN hiap-2

```
2161  ATCTAAAGTAAAAAAGGGAATTATGAGTTTTCAATTAGTAACATTCATGTTCTAGTCTGC
      ------------+---------+---------+---------+---------+---------+  2220

2221  TTTGGTACTAATAAATCTTGTTTCTGAAAAGATGGTATCATATATTTAATCTTAAATCTGTT
      ------------+---------+---------+---------+---------+---------+  2280

2281  TATTTACAAGGGAAGAGATTTATGTTTGGTGAACTATATTAGTATGTATGTGTACCTAAGGG
      ------------+---------+---------+---------+---------+---------+  2340

2341  AGTAGCCGTCXCTGCTTGTTATGCATCATTTCAGGAGTTACTGGATTGTTGTTCTTTCAG
      ------------+---------+---------+---------+---------+---------+  2400

2401  AAAGCTTTGAAXACTAAATTATAGTGTAGAAAAGAACTGGAAACCAGGAACTCTGGAGTT
      ------------+---------+---------+---------+---------+---------+  2460

2461  CATCAGAGTTATGGTGCCGAATTGTCTTTGGTGCTTTCACTTGTGTTTAAAATAAGGA
      ------------+---------+---------+---------+---------+---------+  2520

2521  TTTTCTCTTATTCTCCCCCTAGTTGTGAGAAACATCTCAATAAAGTGCTTTAAAAAG
      ------------+---------+---------+---------+---------+---------+  2580
```

Fig. 3 (page 7 of 7)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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MOUSE xiap

SEQ ID NO:9

```
  1   GACACTCTGCTGGGCGGCGGCCGCGCCCTCCTCCGGGACCTCCCCTCGGGAACCGTCGCCC   60
      ---------+---------+---------+---------+---------+---------+   -
 61 a GCGGCGCTTAGTTAGGACTGGAGTGCTTGGCGCGAAAAGGTGGACAAGTCCTATTTCCA  120
      ---------+---------+---------+---------+---------+---------+   -
121 a GAGAAGATGACTTTTAACAGTTTTGAAGGAACTAGAACTTTTGTACTTGCAGACACCAAT  180
      ---------+---------+---------+---------+---------+---------+   -
          M  T  F  N  S  F  E  G  T  R  T  F  V  L  A  D  T  N
```

SEQ ID NO:10

```
181 a AAGGATGAAGAATTTGTAGAAGAGTTTAATAGATTAAAAACATTGCTAACTTCCCAAGT  240
      ---------+---------+---------+---------+---------+---------+   -
       K  D  E  E  F  V  E  E  F  N  R  L  K  T  F  A  N  F  P  S
241 a AGTAGTCCTGTTTCAGCATCAACACATTGGCGCGAGCTGGGTTTCTTTATACCGGTGAAGGA  300
      ---------+---------+---------+---------+---------+---------+   -
       S  S  P  V  S  A  S  T  L  A  R  A  G  F  L  Y  T  G  E  G
301 a GACACCGTGCAATGTTTCAGTTGTCATGCGGCAATAGATAGATGGCAGTATGGAGACTCA  360
      ---------+---------+---------+---------+---------+---------+   -
       D  T  V  Q  C  F  S  C  H  A  A  I  D  R  W  Q  Y  G  D  S
```

Fig. 4 (page 1 of 6)

MOUSE xiap

```
361  GCTGTTGGAAGACACAGGAGAATATCCCCAAATTGCAGATTTATCAATGGTTTTTATTTT  420
     ---+---+---+---+---+---+---+---+---+---+---+---+
  a   A  V  G  R  H  R  R  I  S  P  N  C  R  F  I  N  G  F  Y  F   -

421  GAAAATGGTGCTGCACAGTCTACAAATCCTGGTATCCAAAATGGCCAGTACAAATCTGAA  480
     ---+---+---+---+---+---+---+---+---+---+---+---+
  a   E  N  G  A  A  Q  S  T  N  P  G  I  Q  N  G  Q  Y  K  S  E   -

481  AACTGTGTGGGAAATAGAAATCCTTTTGCCCCTGACAGGCCACCTGAGACTCATGCTGAT  540
     ---+---+---+---+---+---+---+---+---+---+---+---+
  a   N  C  V  G  N  R  N  P  F  A  P  D  R  P  P  E  T  H  A  D   -

541  TATCTCTTGAGAACTGGACAGGTTGTAGATATTTCAGACACCATATACCCGAGGAACCCT  600
     ---+---+---+---+---+---+---+---+---+---+---+---+
  a   Y  L  L  R  T  G  Q  V  V  D  I  S  D  T  I  Y  P  R  N  P   -

601  GCCATGTGTGAGTGAAGAAGCCAGATTGAAGTCATTTCAGAACTGGCCGGACTATGCTCAT  660
     ---+---+---+---+---+---+---+---+---+---+---+---+
  a   A  M  C  S  E  E  A  R  L  K  S  F  Q  N  W  P  D  Y  A  H   -

661  TTAACCCCCAGAGAGTTAGCTGCCTCTACTACACAGGGGCTGATGATCAAGTG  720
     ---+---+---+---+---+---+---+---+---+---+---+---+
  a   L  T  P  R  E  L  A  S  A  G  L  Y  Y  T  G  A  D  D  Q  V   -
```

Fig. 4 (page 2 of 6)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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MOUSE xiap

```
721  CAATGCTTTTGTTGTGGGGGAAAACTGAAAAATTGGGAACCCTGTGATCGTGCCTGGTCA
     ---------+---------+---------+---------+---------+---------+ 780
      Q  C  F  C  C  G  G  K  L  K  N  W  E  P  C  D  R  A  W  S  -

781  GAACACAGGAGACACTTTCCCAATTGCTTTTTTGTTTTGGGCCGGAACGTTAATGTTCGA
     ---------+---------+---------+---------+---------+---------+ 840
      E  H  R  H  F  P  N  C  F  F  V  L  G  R  N  V  N  V  R  -

841  AGTGAATCTGGTGTGAGTTCTGATAGGAATTCCCAAATTCAACAAACTCTCCAAGAAAT
     ---------+---------+---------+---------+---------+---------+ 900
      S  E  S  G  V  S  S  D  R  N  F  P  N  S  T  N  S  P  R  N  -

901  CCAGCCATGGCAGAATATGAAGCACGGATCGTTACTTTTGGAACATGGATATACTCAGTT
     ---------+---------+---------+---------+---------+---------+ 960
      P  A  M  A  E  Y  E  A  R  I  V  T  F  G  T  W  I  Y  S  V  -

961  AACAAGGAGCAGCTTGCAAGAGCTGGATTTTATGCTTTAGGTGAAGGCGATAAAGTGAAG
     ---------+---------+---------+---------+---------+---------+ 1020
      N  K  E  Q  L  A  R  A  G  F  Y  A  L  G  E  G  D  K  V  K  -

1021 TGCTTCCACTGTGGAGGAGGGCTCACGGATTGGAAGCCAAGTGAAGACCCCTGGGACCAG
     ---------+---------+---------+---------+---------+---------+ 1080
      C  F  H  C  G  G  G  L  T  D  W  K  P  S  E  D  P  W  D  Q  -
```

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Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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MOUSE xiap


```
1081  CATGCTAAGTGCTACCCAGGTGCAAATACCTATTGGATGAGAAGGGGCAAGAATATATA  1140
      H  A  K  C  Y  P  G  C  K  Y  L  L  D  E  K  G  Q  E  Y  I

1141  AATAATATTCATTTAACCCATCCACTTGAGGAATCTTTGGGAAGAACTGCTGAAAAAACA  1200
      N  N  I  H  L  T  H  P  L  E  E  S  L  G  R  T  A  E  K  T

1201  CCACCGCTAACTAAAAAAATCGATGATACCATCTTCCAGAATCCTATGGTGCAAGAAGCT  1260
      P  P  L  T  K  K  I  D  D  T  I  F  Q  N  P  M  V  Q  E  A

1261  ATACGAATGGGGATTTAGCTTCAAGGACCTTAAGAAAACAATGGAAGAGAAAAATCCAAACA  1320
      I  R  M  G  F  S  F  K  D  L  K  K  T  M  E  E  K  I  Q  T

1321  TCCGGGGAGCAGCTATCTATCACTTGAGGTCCCTGATTGCAGATCTTGTGAGTGCTCAGAAA  1380
      S  G  S  S  Y  L  S  L  E  V  L  I  A  D  L  V  S  A  Q  K

1381  GATAATACGGAGGATGAGTCAAGTCAAACTTCATTGCAGAAAGACATTAGTACTGAAGAG  1440
      D  N  T  E  D  E  S  S  Q  T  S  L  Q  K  D  I  S  T  E  E
```

Fig. 4 (page 4 of 6)

MOUSE xiap

```
1441 CAGCTAAGGCGCCTACAAGAGGAGAAGCTTTCCAAAATCTGTATGGGATAGAAATATTGCT 1500
     ---------+---------+---------+---------+---------+---------+
a      Q   L   R   R   L   Q   E   E   K   L   S   K   I   C   M   D   R   N   I   A

1501 ATCGTTTTTTTCCTTGTGGACATCTGGCCACTTGTAAACAGTGTGCAGAAGCAGTTGAC 1560
     ---------+---------+---------+---------+---------+---------+
a      I   V   F   F   P   C   G   H   L   A   T   C   K   Q   C   A   E   A   V   D

1561 AAATGTCCCATGTGCTACACCGTCATTACGTTCAACCAAAAATTTTTATGTCTTAGTGG 1620
     ---------+---------+---------+---------+---------+---------+
a      K   C   P   M   C   Y   T   V   I   T   F   N   Q   K   I   F   M   S   *

1621 GGCACCACATGTTATGTTCTTCTTGCTCTAATTGAATGTGTAATGGGAGCCGAACTTTAAG 1680
     ---------+---------+---------+---------+---------+---------+
a

1681 TAATCCTGCATTTGCATTCCATTAGCATCCTGCTGTTTCCAAATGGAGACCAATGCTAAC 1740
     ---------+---------+---------+---------+---------+---------+
a

1741 AGCACTGTTTCCGTCTAAACATTCAATTTCTGGATCTTTCGAGTTATCAGCTGTATCATT 1800
     ---------+---------+---------+---------+---------+---------+
a
```

Fig. 4 (page 5 of 6)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
Applicant(s): Robert G. Korneluk et al.
Client/Matter No.: 07891/003005
Filing Date: September 1, 2000   Serial No.: 09/654,743
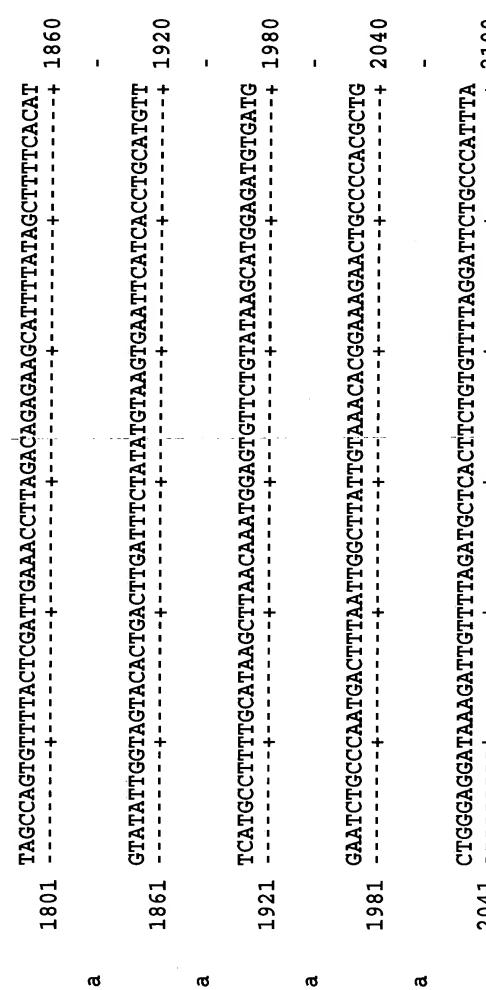Page 28 of 61   Customer No.: 21559

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MOUSE xiap

```
1801 TAGCCAGTGTTTACTCGATTGAAACCTTAGACAGAGAAGCATTTTATAGCTTTTCACAT
     ---------+---------+---------+---------+---------+---------+ 1860

1861 GTATATTGGTAGTACACTGACTTGATTTCTATATGTAAGTGAATTCATCACCTGCATGTT
     ---------+---------+---------+---------+---------+---------+ 1920

1921 TCATGCCTTTTGCATAAGCTTAACAAATGGAGTGTTCTGTATAAGCATGGAGATGTGATG
     ---------+---------+---------+---------+---------+---------+ 1980

1981 GAATCTGCCCAATGACTTTAATTGGCTTATTGTAAACACGGAAAGAACTGCCCCACGCTG
     ---------+---------+---------+---------+---------+---------+ 2040

2041 CTGGGGAGGATAAAGATTGTTTTAGATGCTCACTTCTGTGTTTTAGGATTCTGCCCATTTA
     ---------+---------+---------+---------+---------+---------+ 2100
```
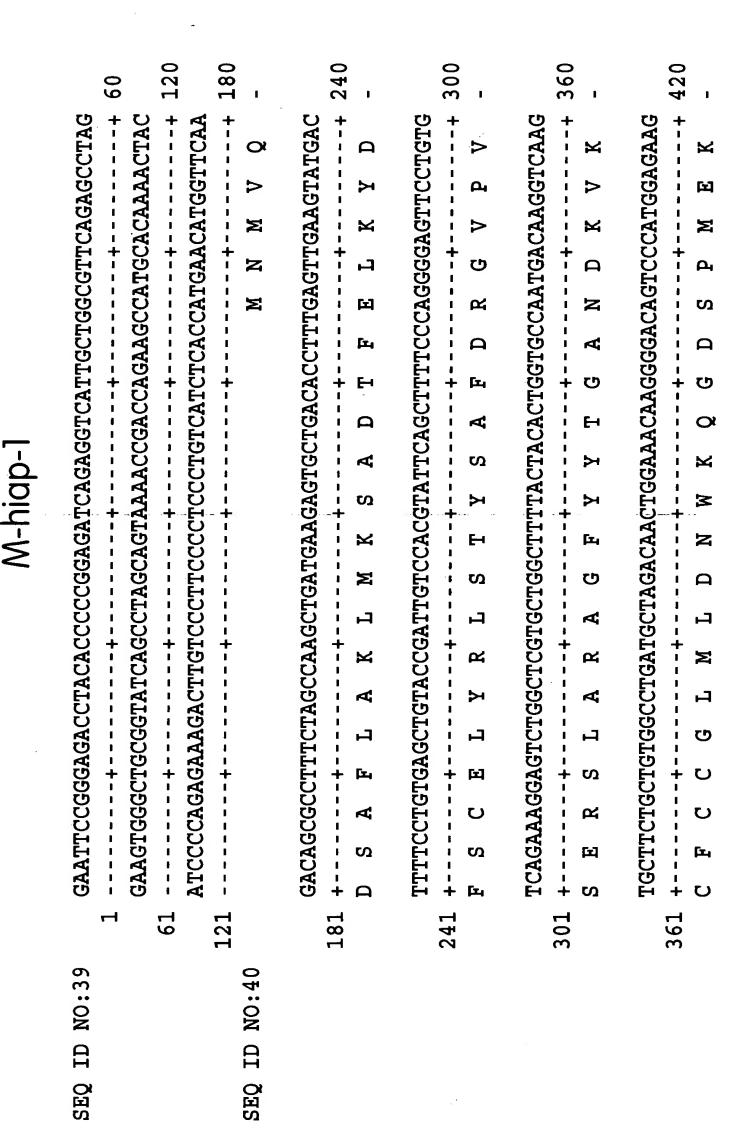
Fig. 4 (page 6 of 6)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
Applicant(s): Robert G. Korneluk et al.
Client/Matter No.: 07891/003005
Filing Date: September 1, 2000   Serial No.: 09/654,743
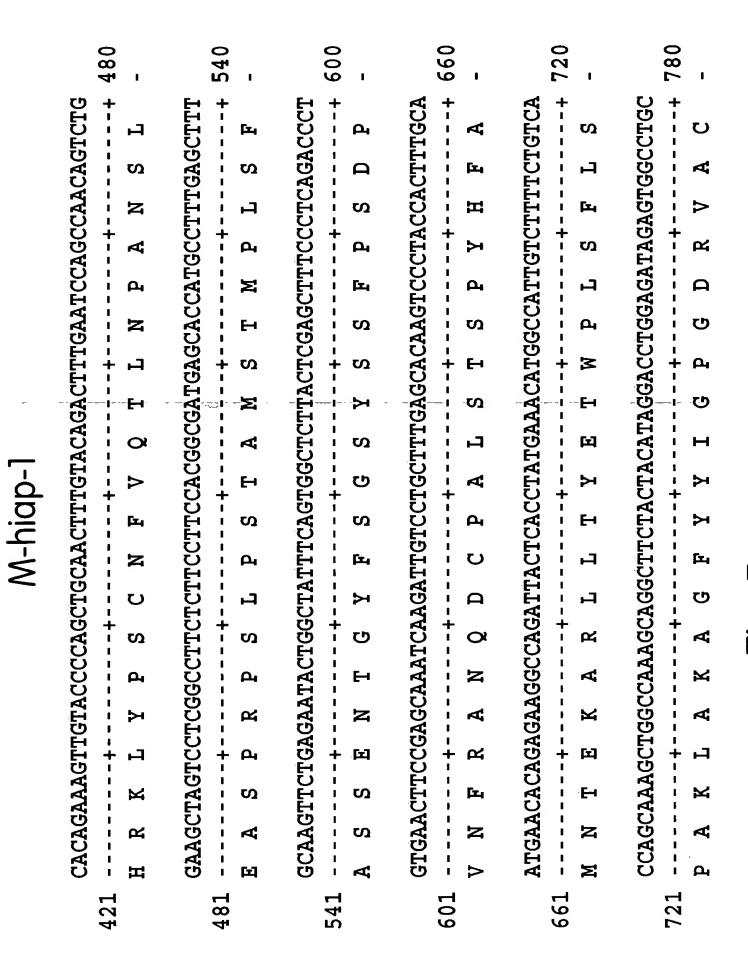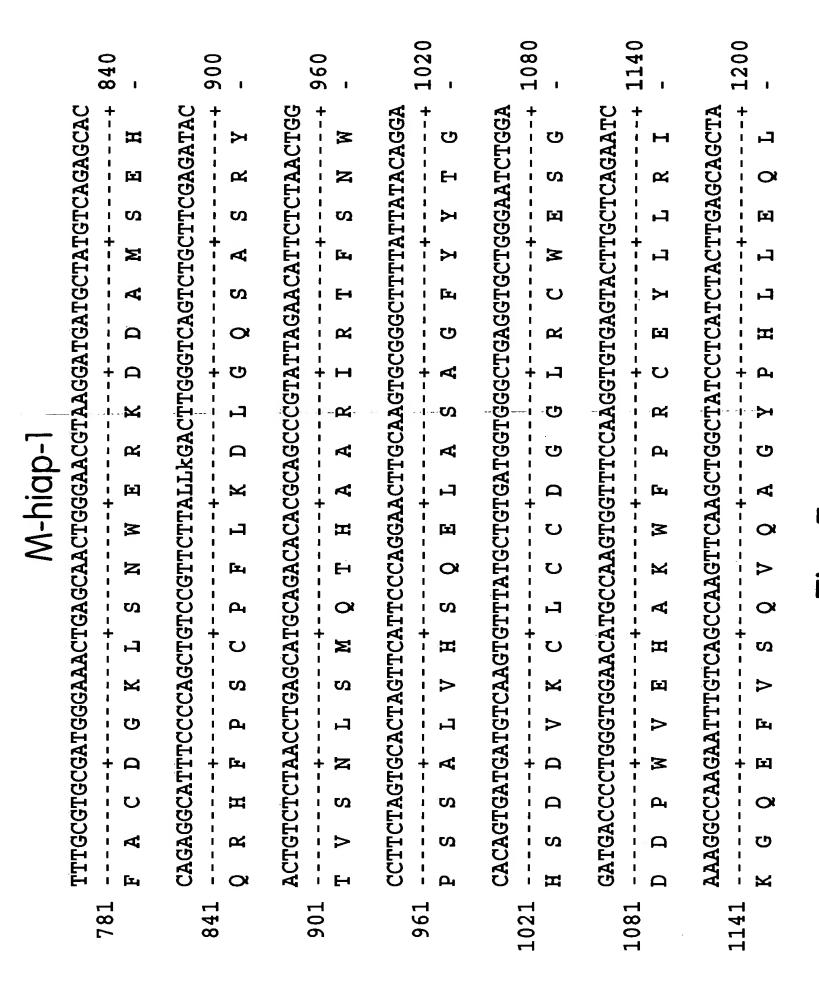Page 29 of 61   Customer No.: 21559

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M-hiap-1

SEQ ID NO:39

```
GAATTCCGGGAGACCTACACCCCCGGAGATCAGAGGTCATTGCTGGCGTTCAGAGCCTAG
1    ---:---+---:---+---:---+---:---+---:---+---:---+    60
GAAGTGGGCTGCGTATCAGCCTAGCAGTAAAACCGACCAGAAGCCATGCACAAAACTAC
61   ---:---+---:---+---:---+---:---+---:---+---:---+    120
ATCCCCAGAGAAAGACTTGTCCCTTCCCCTCCCTGTCATCTCACCATGAACATGGTTCAA
121  ---:---+---:---+---:---+---:---+---:---+---:---+    180
                                              M  N  M  V  Q
```

SEQ ID NO:40

```
GACAGCGCCTTTCTAGCCAAGCTGATGAAGAGTGCTGACACCTTTGAGTTGAAGTATGAC
181  ---:---+---:---+---:---+---:---+---:---+---:---+    240
 D  S  A  F  L  A  K  L  M  K  S  A  D  T  F  E  L  K  Y  D
TTTTCCTGTGAGCTGTACCGATTGTCCACGTATTCAGCTTTTCCCAGGGGAGTTCCTGTG
241  ---:---+---:---+---:---+---:---+---:---+---:---+    300
 F  S  C  E  L  Y  R  L  S  T  Y  S  A  F  D  R  G  V  P  V
TCAGAAAGGAGTCTGGCTCGCGTGCTGGCTTTACTACACTGGTGCCAATGACAAGGTCAAG
301  ---:---+---:---+---:---+---:---+---:---+---:---+    360
 S  E  R  S  L  A  R  A  G  F  Y  Y  T  G  A  N  D  K  V  K
TGCTTCTGCTGTGGCCTGATGCTAGACAACTGGAAACAAGGGGACAGTCCCATGGAGAAG
361  ---:---+---:---+---:---+---:---+---:---+---:---+    420
 C  F  C  C  G  L  M  L  D  N  W  K  Q  G  D  S  P  M  E  K
```

Fig. 5 (page 1 of 6)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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```
421 CACAGAAAGTTGTACCCCAGCTGCAACTTTGTACAGACTTTGAATCCAGCCAACAGTCTG
    ---------+---------+---------+---------+---------+---------+ 480
      H  R  K  L  Y  P  S  C  N  F  V  Q  T  L  N  P  A  N  S  L  -

481 GAAGCTAGTCCTCGGCCCTTCTCTTCCACGGCGATGAGCACCATGCCTTTGAGCTTT
    ---------+---------+---------+---------+---------+---------+ 540
      E  A  S  P  R  P  S  L  P  S  T  A  M  S  T  M  P  L  S  F  -

541 GCAAGTTCTGAGAATACTGGCTATTTCAGTGGCTCTTACTCGAGCTTTCCCTCAGACCCT
    ---------+---------+---------+---------+---------+---------+ 600
      A  S  S  E  N  T  G  Y  F  S  G  S  Y  S  S  F  P  S  D  P  -

601 GTGAACTTCCGAGCAAATCAAGATTGTCCTGCTTTGAGCACAAGTCCCTACCACTTTGCA
    ---------+---------+---------+---------+---------+---------+ 660
      V  N  F  R  A  N  Q  D  C  P  A  L  S  T  S  P  Y  H  F  A  -

661 ATGAACACAGAGAAGGCCAGATTACTCACCTATGAAACATGGCCATTGTCTTTTCTGTCA
    ---------+---------+---------+---------+---------+---------+ 720
      M  N  T  E  K  A  R  L  L  T  Y  E  T  W  P  L  S  F  L  S  -

721 CCAGCCAAAGCTGGCCAAAGCAGGCTTCTACTACATAGGACCTGGAGATAGAGTGGCCTGC
    ---------+---------+---------+---------+---------+---------+ 780
      P  A  K  L  A  K  A  G  F  Y  Y  I  G  P  G  D  R  V  A  C  -
```
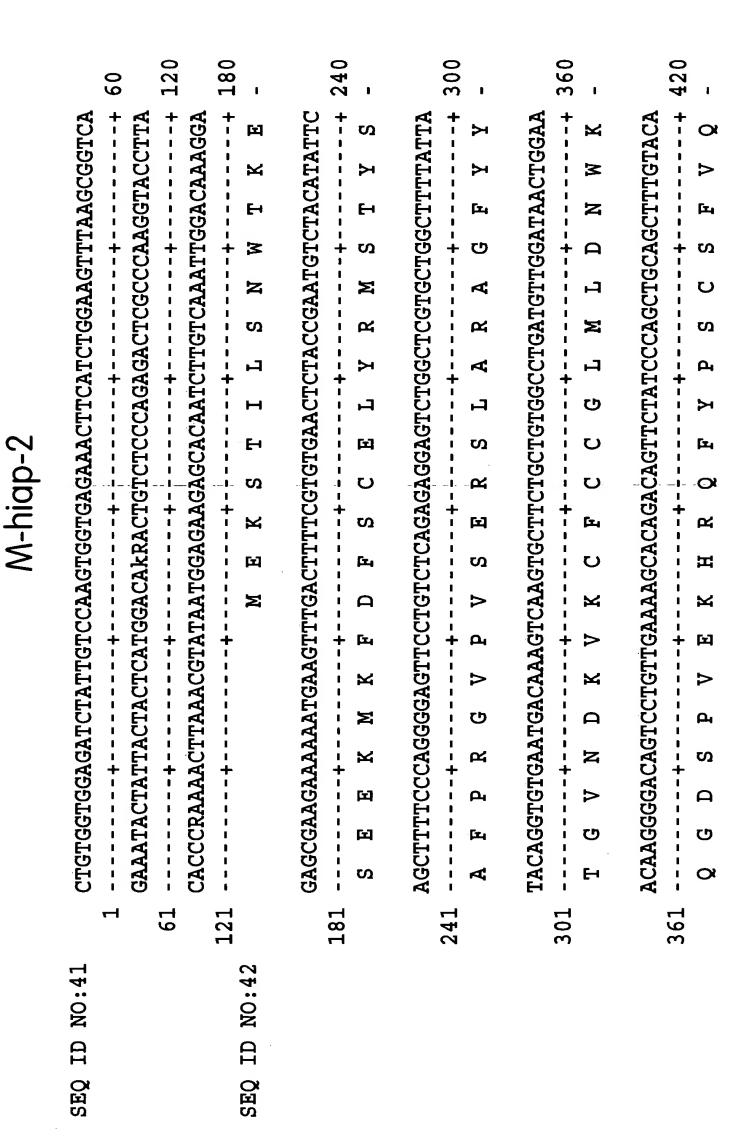
Fig. 5 (page 2 of 6)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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```
781  TTTGGCGTGCGATGGGAAACTGAGCAACTGGGAACGTAAGGATGATGCTATGTCAGAGCAC
     ------------+---------+---------+---------+---------+---------+ 840
          F  A  C  D  G  K  L  S  N  W  E  R  K  D  D  A  M  S  E  H

841  CAGAGGCATTCCCCAGCTGTCCGTTCTTALLkGACTTGGGTCAGTCTGCTTCGAGATAC
     ------------+---------+---------+---------+---------+---------+ 900
          Q  R  H  F  P  S  C  P  F  L  K  D  L  G  Q  S  A  S  R  Y

901  ACTGTCTCTAACCTGAGCATGCAGACACACGCAGCCCGTATTAGAACATTCTCTAACTGG
     ------------+---------+---------+---------+---------+---------+ 960
          T  V  S  N  L  S  M  Q  T  H  A  A  R  I  R  T  F  S  N  W

961  CCTTCTAGTGCACTAGTTCATTCCCAGGAACTTGCAAGTGCGGGCTTTTATTATACAGGA
     ------------+---------+---------+---------+---------+---------+ 1020
          P  S  S  A  L  V  H  S  Q  E  L  A  S  A  G  F  Y  Y  T  G

1021 CACAGTGATGATGTCAAGTGTTTATGCTGTGATGGTGGGCTGAGGTGCTGGGAATCTGGA
     ------------+---------+---------+---------+---------+---------+ 1080
          H  S  D  D  V  K  C  L  C  C  D  G  G  L  R  C  W  E  S  G

1081 GATGACCCCTGGGTGGAACATGCCAAGTGGTTTCCAAGGTGTGAGTACTTGCTCAGAATC
     ------------+---------+---------+---------+---------+---------+ 1140
          D  D  P  W  V  E  H  A  K  W  F  P  R  C  E  Y  L  L  R  I

1141 AAAGGCCAAGAATTTGTCAGCCAAGTTCAAGCTGGCTATCCTCATCTACTTGAGCAGCTA
     ------------+---------+---------+---------+---------+---------+ 1200
          K  G  Q  E  F  V  S  Q  V  Q  A  G  Y  P  H  L  L  E  Q  L
```

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Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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```
1201  TTATCTACGTCAGACTCCCCAGAAGATGAGAATGCAGACGCGCAGCAATCGTGCATTTTGGC
      ----+----+----+----+----+----+----+----+----+----+----+----+ 1260
       L  S  T  S  D  S  P  E  D  E  N  A  D  A  A  I  V  H  F  G

1261  CCTGGAGAAAGTTCGGAAGATGTCGTCATGATGAGCACGCCTGTTGGTTAAAGCAGCCTTG
      ----+----+----+----+----+----+----+----+----+----+----+----+ 1320
       P  G  E  S  S  E  D  V  V  M  M  S  T  P  V  V  K  A  A  L

1321  GAAAATGGGCTTCAGTAGGAGCCTGGTGAGACAGACGGTTCAGTGGCAGATCCTGGCCACT
      ----+----+----+----+----+----+----+----+----+----+----+----+ 1380
       E  M  G  E  S  R  S  L  V  R  Q  T  V  Q  W  Q  I  L  A  T

1381  GGTGAGAACTACAGGACCGTCAGTGACCTCGTTATAGGCTTACTCGATGCAGAAGACGAG
      ----+----+----+----+----+----+----+----+----+----+----+----+ 1440
       G  E  N  Y  R  T  V  S  D  L  V  I  G  L  L  D  A  E  D  E

1441  ATGAGAGAGGAGCAGCAGATGGAGCAGGCGCCCGAGGAGGAGTCAGATGATCTAGCACTA
      ----+----+----+----+----+----+----+----+----+----+----+----+ 1500
       M  R  E  E  Q  M  E  Q  A  A  E  E  E  S  D  D  L  A  L

1501  ATCCGGAAGAACAAAAATGGTGCTTTTCCAACATTTGACGTGTGTGACACCAATGCTGTAT
      ----+----+----+----+----+----+----+----+----+----+----+----+ 1560
       I  R  K  N  K  M  V  L  F  Q  H  L  T  C  V  T  P  M  L  Y
```

Fig. 5 (page 4 of 6)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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```
1561  TGCCTCCTAAGTGCAAGGGCCATCACTGAACAGGAGTGCAATGCTGTGAAACAGAAACCA  1620
      ---------+---------+---------+---------+---------+---------+
       C  L  L  S  A  R  A  I  T  E  Q  E  C  N  A  V  K  Q  K  P

1621  CACACCTTACAAGCAAGCACACTGATTGATACTGTGTTAGCAAAAGGAAACACTGCAGCA  1680
      ---------+---------+---------+---------+---------+---------+
       H  T  L  Q  A  S  T  L  I  D  T  V  L  A  K  G  N  T  A  A

1681  ACCTCATTCAGAAACTCCCTTCGGGAAATTGACCCTGCGTTATACAGAGATATATTTGTG  1740
      ---------+---------+---------+---------+---------+---------+
       T  S  F  R  N  S  L  R  E  I  D  P  A  L  Y  R  D  I  F  V

1741  CAACAGGACACATTAGGAGTCTTCCCACAGATGACATTGCAGCTCCTACCAATGGAAGAACAG  1800
      ---------+---------+---------+---------+---------+---------+
       Q  Q  D  I  R  S  L  P  T  D  D  I  A  A  L  P  M  E  E  Q

1801  TTGCGGCCCCTCCCGGAGGACAGAATGTGTAAAGTGTGTATGGACCGAGAGGTATCCATC  1860
      ---------+---------+---------+---------+---------+---------+
       L  R  P  L  P  E  D  R  M  C  K  V  C  M  D  R  E  V  S  I

1861  GTGTTCATTCCCTGTGGCCATCTGGTCGTGTGCAAAGACTGCGCTCCCTCTCTGAGGAAG  1920
      ---------+---------+---------+---------+---------+---------+
       V  F  I  P  C  G  H  L  V  V  C  K  D  C  A  P  S  L  R  K
```

Fig. 5 (page 5 of 6)

Fig. 5 (page 6 of 6)

M-hiap-2

SEQ ID NO:41

```
    CTGTGGTGGAGATCTATTGTCCAAGTGGTGAGAAACTTCATCTGGAAGTTTAAGCGGTCA
1   ---------+---------+---------+---------+---------+---------+    60
    GAAATACTATTACTACTCATGGACAkRACTGTCTCCCAGAGACTCGCCCAAGGTACCTTA
61  ---------+---------+---------+---------+---------+---------+    120
    CACCCRAAAACTTAAACGTATAAATGGAGAAGAGCACAATCTTGTCAAATTGGACAAAGGA
121 ---------+---------+---------+---------+---------+---------+    180
```

SEQ ID NO:42

```
                      M  E  K  S  T  I  L  S  N  W  T  K  E
    GAGCGAAGAGAAAAATGAAGTTTGACTTTTCGTGTGAACTCTACCGAATGTCTACATATTC
181 ---------+---------+---------+---------+---------+---------+    240
     S  E  E  K  M  K  F  D  F  S  C  E  L  Y  R  M  S  T  Y  S
    AGCTTTTCCCAGGGGAGTTCCTGTCTCAGAGAGGAGTCTGGCTCGTGCTGGCTTTTATTA
241 ---------+---------+---------+---------+---------+---------+    300
     A  F  P  R  G  V  P  V  S  E  R  S  L  A  R  A  G  F  Y  Y
    TACAGGTGTGAATGACAAAGTCAAGTGCTTCTGCTGTGGCCTGATGTTGGATAACTGGAA
301 ---------+---------+---------+---------+---------+---------+    360
     T  G  V  N  D  K  V  K  C  F  C  C  G  L  M  L  D  N  W  K
    ACAAGGGGACAGTCCTGTTGAAAAGCACAGACAGTTCTATCCCAGCTGCAGCTTTGTACA
361 ---------+---------+---------+---------+---------+---------+    420
     Q  G  D  S  P  V  E  K  H  R  Q  F  Y  P  S  C  S  F  V  Q
```

Fig. 6 (page 1 of 6)

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M-hiap-2

```
421  GACTCTGCTTTCAGCCAGTCTGCAGTCTCCATCTAAGAATATGTCTCCTGTGAAAAGTAG
     ----+----+----+----+----+----+----+----+----+----+----+----+  480
      T  L  L  S  A  S  L  Q  S  P  S  K  N  M  S  P  V  K  S  R

481  ATTTGCACATTCGTCACCTCTGGAACGAGGTGGCATTCACTCCAACCTGTGCTCTAGCCC
     ----+----+----+----+----+----+----+----+----+----+----+----+  540
      F  A  H  S  S  P  L  E  R  G  G  I  H  S  N  L  C  S  S  P

541  TCTTAATTCTAGAGCAGTGGAAGACTTCTCATCAAGGATGGATCCCTGCAGCTATGCCAT
     ----+----+----+----+----+----+----+----+----+----+----+----+  600
      L  N  S  R  A  V  E  D  F  S  S  R  M  D  P  C  S  Y  A  M

601  GAGTACAGAAGAGGCCAGATTCTTACTTACAGTATGTGGCCTTTAAGTTTTCTGTCACC
     ----+----+----+----+----+----+----+----+----+----+----+----+  660
      S  T  E  E  A  R  F  L  T  Y  S  M  W  P  L  S  F  L  S  P

661  AGCAGAGAGCTGGCCAGAGCTGGCTTCTATTACATAGGGCCTGGAGACAGGGTGGCCTGTTT
     ----+----+----+----+----+----+----+----+----+----+----+----+  720
      A  E  L  A  R  A  G  F  Y  Y  I  G  P  G  D  R  V  A  C  F

721  TGCCTGTGGTGGGAAACTGAGCAACTGGGAACCAAAGGATTATGCTATGTCAGAGCACCG
     ----+----+----+----+----+----+----+----+----+----+----+----+  780
      A  C  G  K  L  S  N  W  E  P  K  D  Y  A  M  S  E  H  R
```

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```
781  CAGACATTTCCCCACTGTCCATTTCTGGAAAATACTTCAGAAACACAGAGGTTTAGTAT
     ---------+---------+---------+---------+---------+---------+ 840
      R  H  F  P  H  C  P  F  L  E  N  T  S  E  T  Q  R  F  S  I  -

841  ATCAAATCTAAGTAGTGCAGAGACACACTCTGCTCGATTGAGGACATTTCTGTACTGGCCACC
     ---------+---------+---------+---------+---------+---------+ 900
      S  N  L  S  M  Q  T  H  S  A  R  L  R  T  F  L  Y  W  P  P  -

901  TAGTGTTCCTGTTCAGCCCGAGCAGCTTGCAAGTGCTGGATTCTATTACGTGGATCGCRA
     ---------+---------+---------+---------+---------+---------+ 960
      S  V  P  V  Q  P  E  Q  L  A  S  A  G  F  Y  Y  V  D  R  N  -

961  TGATGATGTCAAGTGCCTTTGTTGTGATGGTGGCTTGAGATGTTGGGAACCTGGAGATGA
     ---------+---------+---------+---------+---------+---------+ 1020
      D  D  V  K  C  L  C  C  D  G  G  L  R  C  W  E  P  G  D  D  -

1021 CCCCTGGATAGAACACGCCAAATGGTTTCCAAGGTGTGAGTTCTTGATACGGATGAAGGG
     ---------+---------+---------+---------+---------+---------+ 1080
      P  W  I  E  H  A  K  W  F  P  R  C  E  F  L  I  R  M  K  G  -

1081 TCAGGAGTTTGTTGATGAGATTCAAGCTAGATATCCTCATCTTCTTGAGCAGCTGTTGTC
     ---------+---------+---------+---------+---------+---------+ 1140
      Q  E  F  V  D  E  I  Q  A  R  Y  P  H  L  E  Q  L  L  S  -
```

Fig. 6 (page 3 of 6)

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Fig. 6 (page 4 of 6)

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```
1501  TAATCTTCTTGAGGCCAGTGTAATTACAAAACAGGAACATGATATTATTAGACAGAAAAC  1560
      ----:----+----:----+----:----+----:----+----:----+----:----+  -
             N  L  E  A  S  V  I  T  K  Q  E  H  D  I  I  R  Q  K  T

1561  ACAGATACCCTTACAAGCAAGAGAGCTTATTGACACCGTTTTAGTCAAGGGAAATGCTGC  1620
      ----:----+----:----+----:----+----:----+----:----+----:----+  -
      Q  I  P  L  Q  A  R  E  L  I  D  T  V  L  V  K  G  N  A  A

1621  AGCCAACACATCTTCAAAAAACTCTCTGAAGGGAATTGACTCCACGTTATATGAAAACTTATT  1680
      ----:----+----:----+----:----+----:----+----:----+----:----+  -
      A  N  I  F  K  N  S  L  K  G  I  D  S  T  L  Y  E  N  L  F

1681  TGTGGAAAAGAATATGAAGTATATTCCAACAGAAGACGTTTCAGGCTTGTCATTGGAAGA  1740
      ----:----+----:----+----:----+----:----+----:----+----:----+  -
      V  E  K  N  M  K  Y  I  P  T  E  D  V  S  G  L  S  L  E  E

1741  GCAGTTGCGGAGATTACAAGAAGAACGAACTTGCAAAGTGTGTATGGACAGAGAGGTTTC  1800
      ----:----+----:----+----:----+----:----+----:----+----:----+  -
      Q  L  R  R  L  Q  E  E  R  T  C  K  V  C  M  D  R  E  V  S

1801  TATTGTTGTTCATTCCGTGTGGTCATCTAGTAGTCTGCCAGGAATGTGCCCCTTCTCTAAG  1860
      ----:----+----:----+----:----+----:----+----:----+----:----+  -
      I  V  F  I  P  C  G  H  L  V  V  C  Q  E  C  A  P  S  L  R
```

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```
1861  GAAGTGCCCCATCTGCCAGGGGGACAATCAAGGGGACTGTGCCGCACATTTCTCTCATGAGT  1920
      ---------+---------+---------+---------+---------+---------+   -
       K   C   P   I   C   R   G   T   I   K   G   T   V   R   T   F   L   S   *

1921  GAAGAATGGTCTGAAAGTATTGTTGGACATCAGAAGCTGTCAGAACAAAGAATGAACTAC  1980
      ---------+---------+---------+---------+---------+---------+

1981  TGATTTCAGCTCTTCAGCAGGACATTCTACTCTCTTTCAAGATTAGTAATCTTGCTTTAT  2040
      ---------+---------+---------+---------+---------+---------+

2041  GAAGGGTAGCATTGTATATTTAAGCTTAGTCTGTTGCAAGGGAAGGTCTATGCTGTTGAG  2100
      ---------+---------+---------+---------+---------+---------+

2101  CTACAGGACTGTGTCTGTTCCAGAGCAGGAGTTGGGATGCTTGCTGTGTATGTCCTTCAGGA  2160
      ---------+---------+---------+---------+---------+---------+

2161  CTTCTTGGGATTTGGGAATTTGGGGAAAGCTTTGGAATCCAGTGATGTGGAGCTCAGAAA  2220
      ---------+---------+---------+---------+---------+---------+

2221  TCCTGGAACCAGTGACTCTGGTACTCAGTAGATAGGGTACCCTGTACTTCTTGGTGCTTT  2280
      ---------+---------+---------+---------+---------+---------+

2281  TCCAGTCTCGGGAAATAAGGAGGAATCTGCTGCTGGTAAAAATTTGCTGGATGTGAGAAAT  2340
      ---------+---------+---------+---------+---------+---------+

2341  AGATGAAAGTGTTTCGGGTGGGGGCGTGCATCAGTGTGTGCAGGGATGTATGCAG  2400
      ---------+---------+---------+---------+---------+---------+

2401  GCCAAACACTGTGTAG  2416
      ---------+------
```

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Fig. 7

Alignment of BIR (Baculoviral IAP Repeats) Domains

Baculovirus
Cp_iap   Cydia pomonella
Op_iap   Orgyia pseudotsugata

Human
xiap   IAP on X chromosome
hiap1, hiap2   two different human IAP genes

Mouse
m-xiap   mouse homologue of human xiap gene

Insect
diap   Drosophila IAP gene, not clearly a homologue of xiap or hiap

note on consensus: The consensus line represents amino acids or very similar amino acids which are present in 14 of the 19 BIR sequences at each position. Capitalized residues are those that are in the consensus sequence.

```
                        1                                                          68
SEQ ID NO:11  Op_iap-1   kaaRLgTYtn WPvqf.leps rMAasGFYYl GrgDeVrCaf CkveitnWvr gDdpetdHkr waPqCpFV
SEQ ID NO:14  Cp_iap-1   eevRLnTFek WPvsf.lspe tMAknGFYYl GrsDeVrCaf CkveimrWke gEdpaadHkk waPqCpFV
SEQ ID NO:15  diap-2     eanRLvTFkd WPnpn.iLpq aLAkAGFYYl nrlDhVkCvw nDnafeeHkr fFPqCprV
SEQ ID NO:16  m-xiap-1   efnRLkTFan FPssspvsas tLArAGFLYt GegDtVqCFs ChaaidrWqy gDsavgrHrr isPnCrFI
SEQ ID NO:17  xiap-1     efnRLkTFan FPsgspvsas tLArAGFLYt GegDtVrCFs ChaavdrWqy gDsavgrHrk vsPnCrFI
SEQ ID NO:18  hiap1-1    elyRMsTYst FPagvpvser sLArAGFYYt GvnDkVkCFc Cg1mldnWkr gDsptekHkk lyPsCrFV
SEQ ID NO:19  hiap2-1    elyRMsTYst FPagvpvser sLArAGFYYt GvnDkVkCFc Cg1mldnWkl gDspiqkHkq lyPsCsFI
SEQ ID NO:20  m-xiap-2   eeaRLksFqn WPdyahltpr eLAsAGLYYt GadDqVqCFc CggklknWep cDrawseHrr hfPnCfFv
SEQ ID NO:21  xiap-2     eeaRLksFqn WPdyahltpr eLAsAGLLYt GigDqVqCFc CggklknWep cDrawseHrr hfPnCfFV
SEQ ID NO:22  hiap1-2    enaRLiTFgt WP.lLflspt dLArAGFYYi GpgDrVaCFa CggklsnWep kDnamseHlr hfPkCpFI
SEQ ID NO:23  hiap2-2    eeaRFlTYhm WP.lLflsps eLArAGFYYi GpgDrVaCFa CggklsnWep kDdamseHrr hfPnCpFl
SEQ ID NO:24  m-xiap-3   yeaRivTFgt Wiysv..nke qLArAGFYal GegDkVkCFh CgggltdWkp sEdpwdqHak cyPgCkYl
SEQ ID NO:25  xiap-3     yeaRifTFgt Wiysv..nke qLArAGFYal GegDkVkCFh CgggltdWkp sEdpweqHak wyPgCkYl
SEQ ID NO:26  hiap1-3    haaRFkTFfn WPssvlvnpe qLAsAgFYYv GnsDdVkCFc CdgglrcWes gDdpwvqHak wfPrCeyl
SEQ ID NO:27  hiap2-3    haaRMrTFmy WPssvpvqpe qLAsAGFYYv GrnDdVkCFg CdgglrcWes gDdpwveHak wfPrCeFl
SEQ ID NO:28  Op_iap-2   eaaRLrTFae WPrglkqrpe eLAeAGFFYt GggDktrCFc CdgglkdWep dDapwqqHar wydrCeYV
SEQ ID NO:29  Cp_iap-2   eeaRvksFhn WPrcmkqrpe qMAdAGFFYt GygDntkCFy CdgglkdWep eDvpweqHvr widrCaYV
SEQ ID NO:30  diap-3     vdaRLrTFtd WPisniqpas aLAqAGLYYq kigDqVrCFh CniglrsWqk eDepwieHak wsPkCqFV
SEQ ID NO:31  diap-1     esvRLaTFge WPlnapvsae dLvanGFF.. ChvridrWey GtwmeaeCdf gDlvaerHrr ssPiCsmV
SEQ ID NO:2   Consensus  ---RL-TF-- WP------- -LA-AGFYY- G--D-V-CF- C-----W-- -D-----H-- --P-C-FV
```

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```
                                    1                                                    50
          SEQ ID NO:12  cp-iap     ·····················  ·mtelgMelEs  ·vRLaTFgewP  inaPVSaedL
          SEQ ID NO:13  diap       ········  ·.mtfnsfe  gtrtfvladt  nkdeEFveEF  nRLkTFanFP  sssPVSastL
          SEQ ID NO:10  m-xiap        ...mtfnsfe  gsktcvpadi  nkeeEFveEF  nRLkTFanFP  sgsPVSastL
          SEQ ID NO:4   xiap       ..;mivensifl  snlmksantf  elkyDLscEL  yRMsTYstFP  agvPVSersL
          SEQ ID NO:6   hiap1        ...medstil  sdwtns.nkq  kmkyDFscEL  yRMsTYstFP  agvPVSersL
          SEQ ID NO:8   hiap2
          SEQ ID NO:44  consensus  --------  ----  F---E-  -RL-TF--FP  ---PVS---L

                                    51                                                   100
                         BIR 1
                        cp-iap      ·vanGFFaTGk  ·wleaeChfCh  ·vriDrWeyGD  qvaerHrrss  ·PiCsmVla..
                        diap        ARAGFLYTGe  gDtVqCFsCh  aaiDrWqyGD  SavgrHrris  PnCrFIngFy
                        m-xiap      ARAGFLYTGe  gDtVrCFsCh  aavDrWqyGD  SavgrHrkvs  PnCrFIngFy
                        xiap        ARAGFYYTGv  nDkVkCFcCg  lmlDnWkrGD  SptekHkkly  PsCrFVqsLn
                        hiap1       ARAGFYYTGv  nDkVkCFcCg  lmlDnWklGD  SpigkHkqly  PsCsFIqnLV
                        hiap2
                        consensus   ARAGF-YTG-  -D-V-CF-C-  --D-W--GD  S----H----  P-C-FI

                                    101                                                  150
                        cp-iap      ··········  ··········
                        diap        ·feng  aaqStnpgiq  ngqyksenCv  nhcgnvprsq
                        m-xiap       ·lens  atqStnsgiq  ngqykvenYl  gnrnpfapdR
                        xiap        svnnleatsq  ptfpssvths  .thSllpgte  nsgyfrgsYs  gsrdhfaldR
                        hiap1       s.aslgstsk  nt..spmrns  fahSlsptle  hsslfsgsYs  nspsnpvnsR
                        hiap2                                                       slpppplnsR
                        consensus   -----  ----  --S----  --Y----  ------R
```

Fig. 8 (page 1 of 5)

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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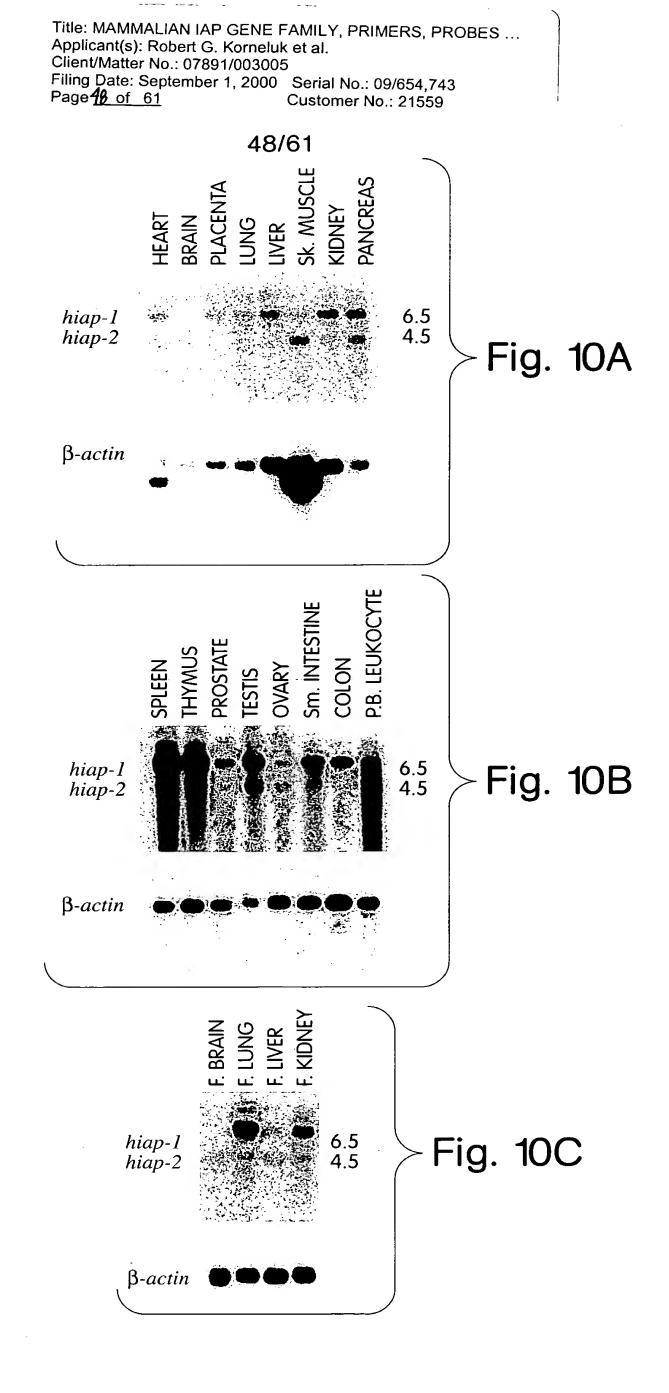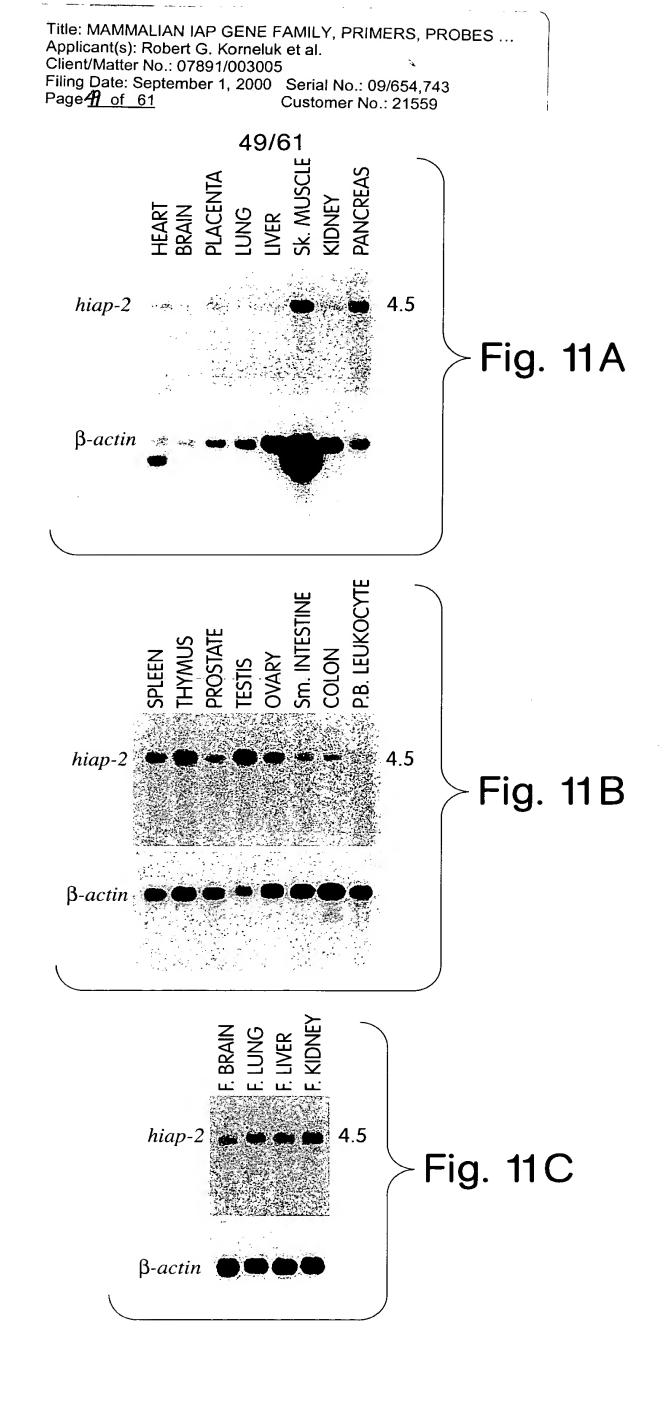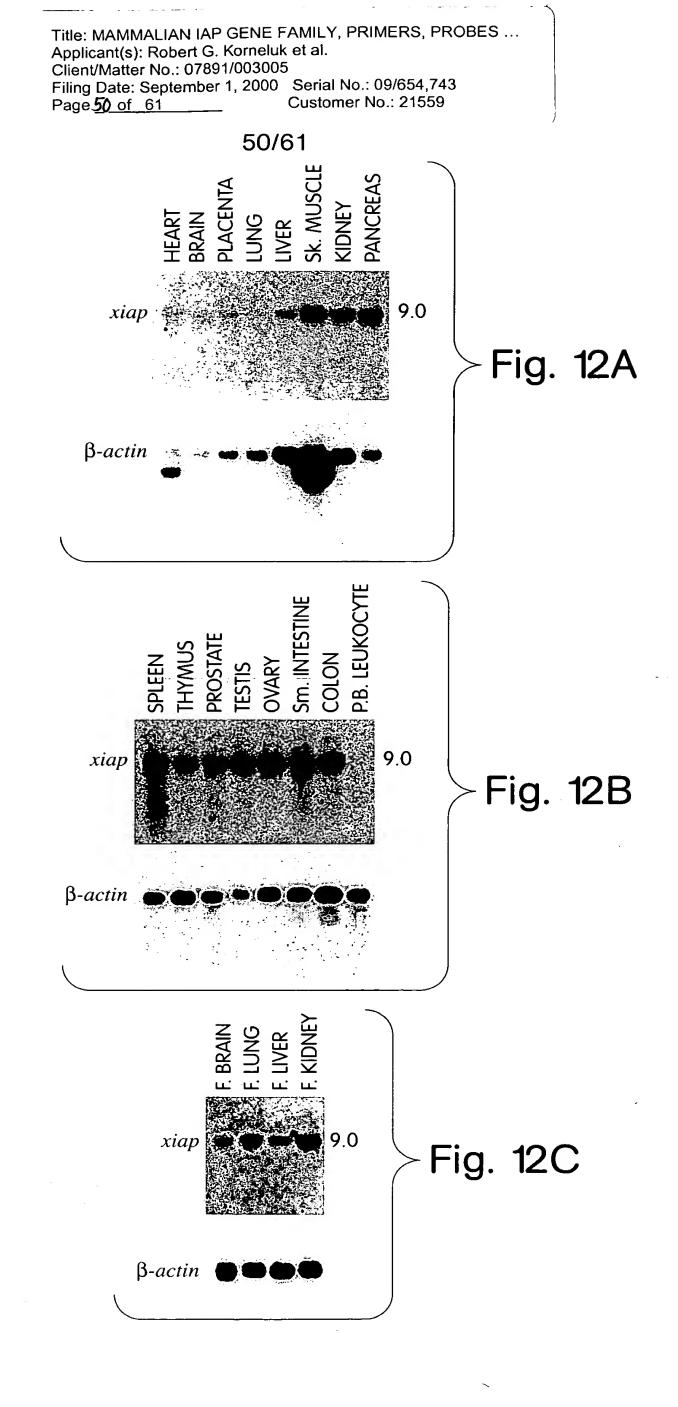Page 43 of 61   Customer No.: 21559

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```
          151                                                    200
cp-iap    ..........  .......mSD  lrl.......  ..EEvRLnTF  ekWPv.sfLs
diap      esDnegnsvv  dspescscpD  lll.......  ..EanRLvTF  kdWPn.pnit
m-xiap    ppEthadyll  rtgqvvDiSD  tiyprnp.aM  csEEARLksF  qnWPdyahLt
xiap      psEthadyll  rtgqvvDiSD  tiyprnp.aM  ycEEARLksF  qnWPdyahLt
hiap1     anq.......  ......EfSa  lmrssypcpM  nnEnARLlTF  qtWP.ltfls
hiap2     avE.......  ......DiSs  srtnpysyaM  stEEARFlTY  hmWP.ltfLs
consensus --E-------  ------D-SD  -------M--  -EEARL-TF-  -WP----L--

                       BIR 2
          201                                                    250
cp-iap    PetMAknGFY  YlGrsDeVrC  afCkveimrW  kegEdpaaDH  kkwaPqCPFV
diap      PqaLakAGFY  YlnrlDhVkC  vwCnGviakW  EknDnAfeEH  kRfFPqCPrV
m-xiap    PrELAsAGLY  YtGadDqVqC  FcCGGKLkNW  EPcDrAwSEH  rRHFPnCfFV
xiap      PrELAsAGLY  YtGigDqVqC  FcCGGKLkNW  EPcDrAwSEH  rRHFPnCfFV
hiap1     PtDlArAGFY  YiGpgDrVaC  FaCGGKLsNW  EPkDnAmSEH  lRHFPkCPFI
hiap2     PsELArAGFY  YiGpgDrVaC  FaCGGKLsNW  EPkDdAmSEH  rRHFPnCPFl
consensus P-ELA-AGFY  Y-G--D-V-C  F-CGGKL-NW  EP-D-A-SEH  -RHFP-CPFV

                       BIR 3
          251                                                    300
cp-iap    kgidvcgsiv  ttnniqnttt  hdtiigPahP  kyAheaARvk  sFhnWPrcmk
diap      qmgplie.fa  tgknldelgi  qpttl.PlrP  kyAcvdARlr  TftdWPiSnI
m-xiap    lgrnvnvrse  s.gvssdrnF  pnStnsPrNP  aMAeyeARiv  TFgtWiyS..
xiap      lgrnlnirse  sdavssdrnF  pnStnlPrNP  sMAdyeARif  TFgtWiyS..
hiap1     ..........  englqdtsrY  tvS.....Nl  sMgthaARfk  TFfnWPsSvl
hiap2     ..........  ensl.etlrF  siS.....Nl  sMgthaARmr  TFmyWPsSvp
consensus ----------  -------F--  -S---P-NP-  -MA--AR---  TF--WP-S--
```

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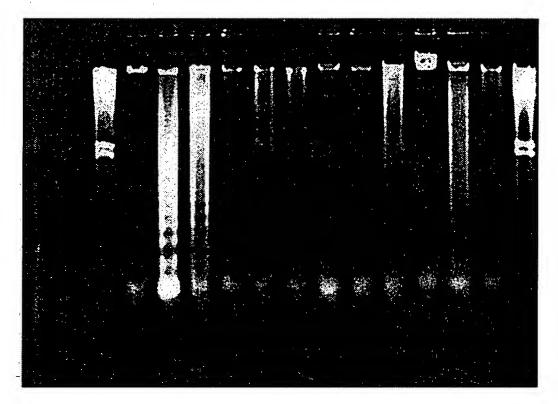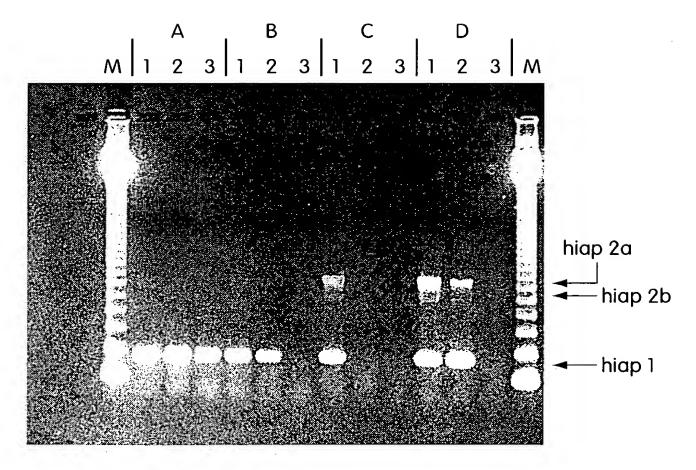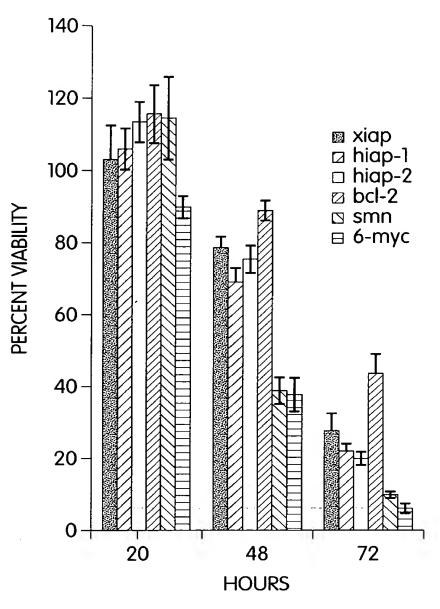Page 44 of 61   Customer No.: 21559

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BIR 3

```
          301                                                    350
cp-iap    qrpEQMAdAG FFYtGyGDnt KCFyCdGGLk dWepeDvPWe QHvrwFdrCa
diap      qpasaLAqAG LYYqkiGdqv rCFhcniGLr sWqkeDEPWf eHAKwsPkCq
m-xiap    VnkEQLArAG FYalGeGDkv KCFhcGgGLt dWkpsEDPWd QHAKcYPgCk
xiap      VnkEQLArAG FYalGeGDkV KCFhcGgGLt dWkpsEDPWd QHAKwYPgCk
hiap1     VnpEQLAsAG FYYvGnsDdV KCFccDGGLr cWesgDDPWv QHAKWFPrCe
hiap2     VqpEQLAsAG FYYvGRsDdV KCFgcDGGLr cWesgDDPWv eHAKWFPrCe
consensus V--EQLA-AG FYY-G-GD-V KCF-C-GGL- -W---DDPW- QHAKWFP-C-

          351                                                    400
cp-iap    YvqlvKGrDY VqkVit.... .......... .......... ..........
diap      FvllaKGpaY VseVlattaa nassqpaTap aptlq..... ..........
m-xiap    YLldeKGQEY InnIhlthp. LeEsLgrTae kt........ ....Ppltk
xiap      YLleqKGQEY InnIhlths. LeEcLvrTte kt........ .....Psltr
hiap1     YLiriKGQEY IrqVqasyph LlEqLlsTsD spgdenaess iihlePgedh
hiap2     FLirmKGQEF VdeIqgryph LlEqLlsTsD ttgeenadpp iihfgPgess
consensus YL---KGQEY ---------- L-E-L--T-- ---------- ----P----

          401                                                    450
cp-iap    ..acVLpge. .......... .......... .......... ..........
diap      .:adVLmdea pakeAltLGi dggvVrnaiq rKIlssGcaF stldeLihDi
m-xiap    kiDdtifqnP mVqeAirMGF sfkdLKktme eKIqtsGssY lslevLiaDL
xiap      riDdtifqnP mVqeAirMGF sfkdIKkime eKIqisGsnY kslevLVaDL
hiap1     seDaIMmntP vInaAveMGF srslVKqtvg rKIlatGenY rlvndLVlDL
hiap2     seDaVMmntP vVksAleMGF nrdlVKqtvl sKIltTGenY ktvndiVsaL
consensus --D-V----P -V--A--MGF ----VK---- -KI---G--Y ----LV-DL
```

Fig. 8 (page 3 of 5)

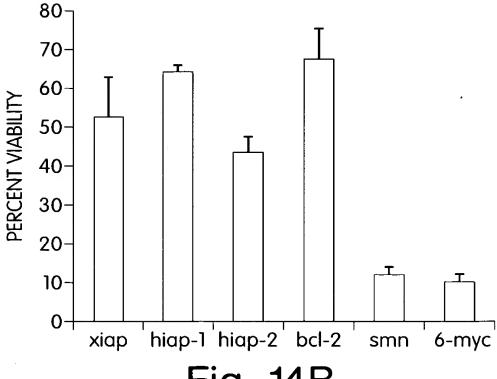Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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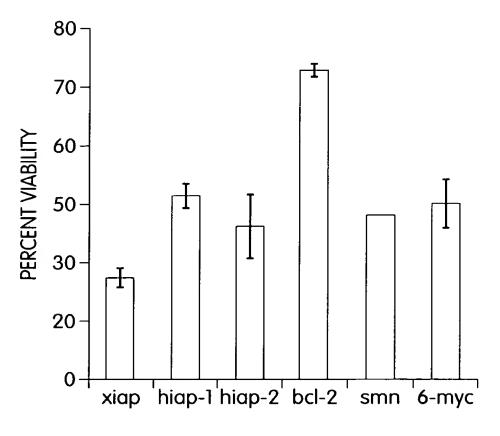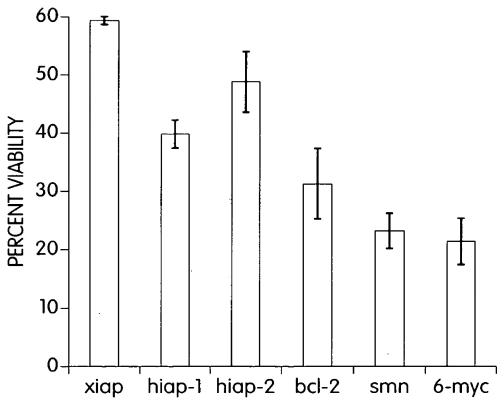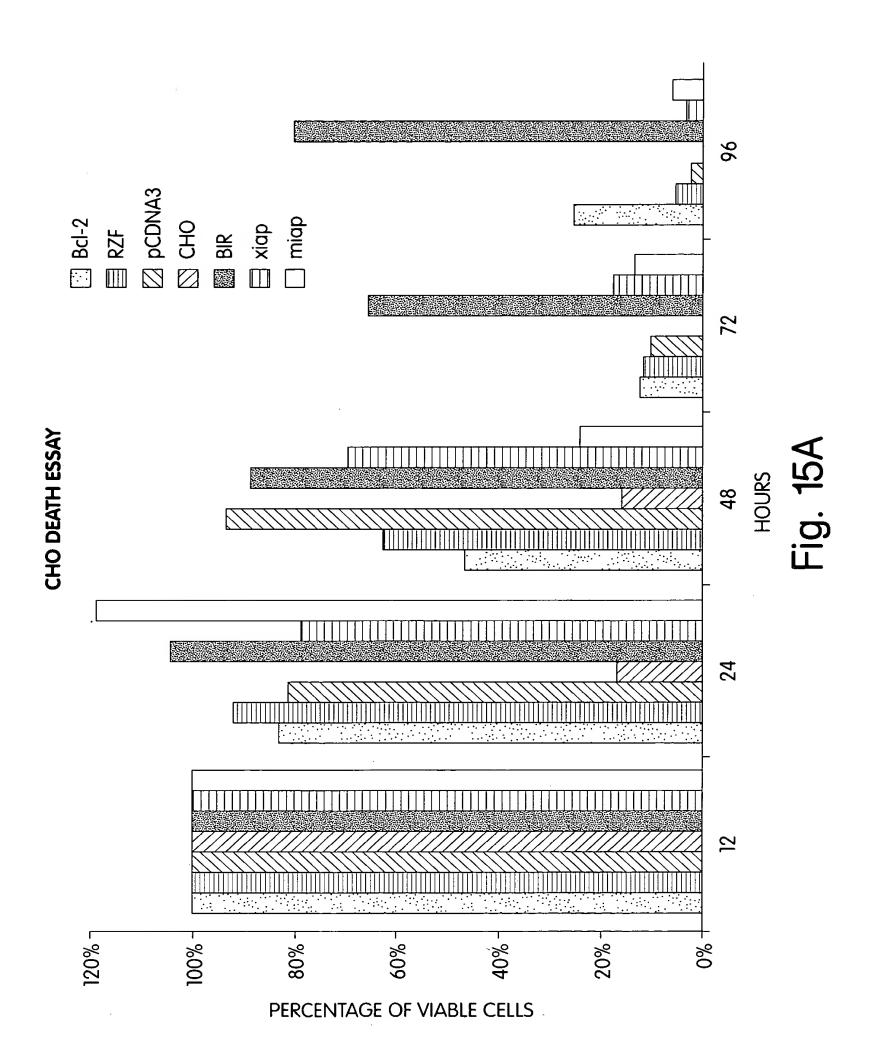Page 45 of 61   Customer No.: 21559

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```
451                                              500
cp-iap     .  .  .  .  .  .  .  .  .  .  .
diap       .fddagagaal Evreppe.  .  .  .  .  .  .  .  .  .
m-xiap     vsAqkDnteD E.  .  .  .  .  .  .  .  .  .
xiap       vnAqkDsmqD E.  .  .  .  .  .  .  .  .  .
hiap1      lnAedEireE Ererateeke sndlllirkn rmalfqhltc vipildslit
hiap2      lnAedEkreE Ekekqaeema sddlslirkn rmalfqqltc vlpildnllk
consensus  --A----- E----- ---- ---- ----

501                                              550
cp-iap     .  .  .  .  .  .  .  .  .  .  .
diap       .  .  .psapfie pcqattskaa svpipvadsi pakpqaaeav
m-xiap     .  .ssQtsL Q.  .  .  .  .  .  .
xiap       .  .ssQtsL Q.  .  .  .  .  .  .
hiap1      agiineqehd .ikqktQtsL Qarelidtil vkgniaatvf rnslqeaeav
hiap2      anvinkqehd iikqktQipL Qarelidtiw vkgnaaanif knclkeidst
consensus  ---- ---Q--L Q----- ---- ----
```

Fig. 8 (sheet 4 of 5)

Ring Zinc Finger

```
          551                                             600
cp-iap    ...tki..... .;........ .Ekepq veDskLCKIC yveEciVcFV
diap      sniskitdei qkmsvstpng nlSiEEenRq LkDarLCKVC LDeEVgVVF1
m-xiap    .........k diStEEQLRR LqEEklsKIC MDrnIaIVFf
xiap      .........k eiStEEEQLRR LqEEklCKIC MDrnIaIVFV
hiap1     lyehlfvqqd ikyiptedvs dlpvEEQLRR LpEErtCKVC MDkEVsIVFI
hiap2     lyknlfvdkn mkyiptedvs glSlEEQLRR LqEErtCKVC MDkEVsVVFI
consensus ---------- -------- --S-EEQLRR L-EE-LCK-C MD-EV--VF-

          601                                     635
cp-iap    PCGHvVaCak CAlSVdKCPM QRkIVtsvlk vYFS.
diap      PCGHLatCnq CApSVanCPM QRadIkgfvr tFLS*
m-xiap    PCGHLatCkq CAeaVdKCPM QytVItfnqk iFMS*
xiap      PCGHLVtCkq CAeaVdKCPM QytVItfkqk iFMS*
hiap1     PCGHLVvCkd CApSlrKCPi QRstIkgtvr tFLS*
hiap2     PCGHLVvCqe CApSlrKCPi QRgiIkgtvr tFLS.
consensus PCGHLV-C-- CA-SV-KCPM QR--I---- -FLS-
```
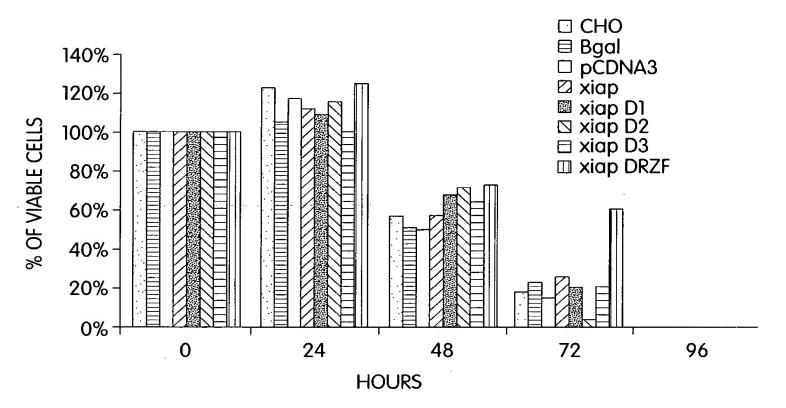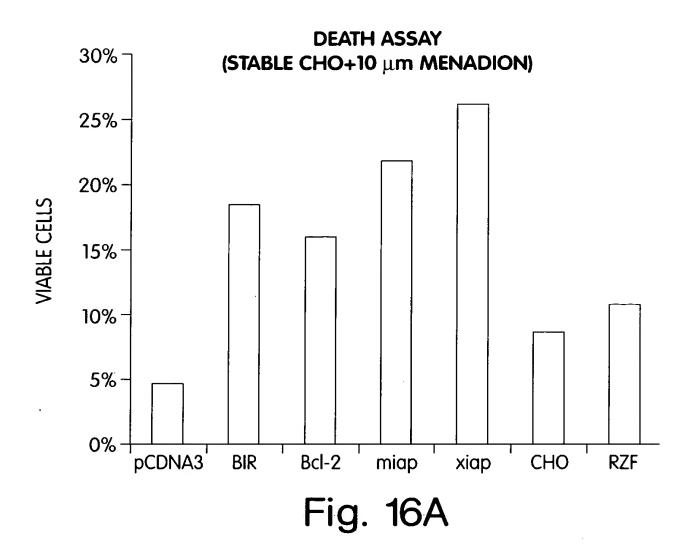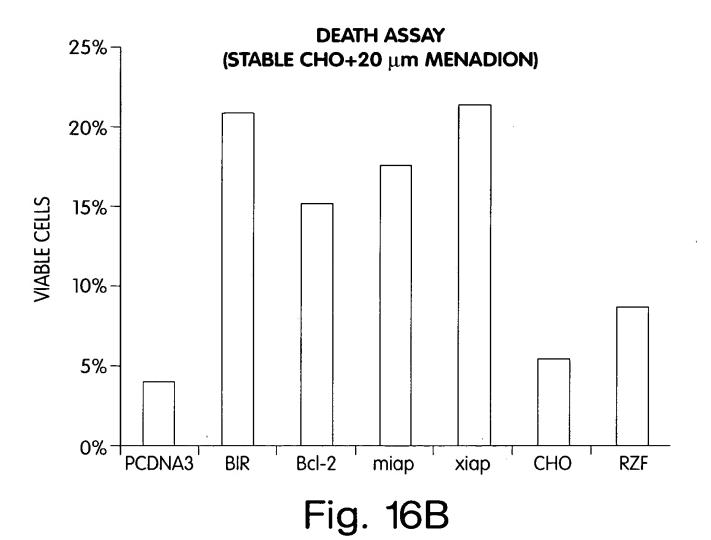
Fig. 8 (sheet 5 of 5)

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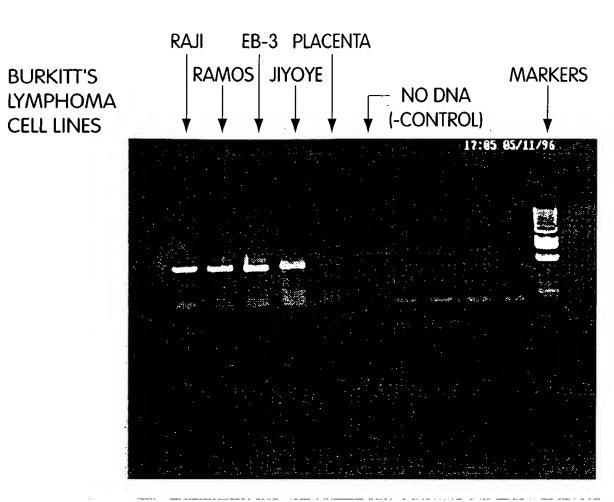Page 47 of 61   Customer No.: 21559

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Alignment of RZF (Ring Zinc Finger) Domains

Baculovirus
Cp_iap   Cydia pomonella
Op_iap   Orgyia pseudotsugata
Human
xiap   IAP on X chromosome
hiap1, hiap2 two different human IAP genes
Mouse
m-xiap   mouse homologue of human xiap gene
Insect
diap   Drosophilia IAP gene, not clearly a homologue of xiap or hiap

note on consensus: The consensus line represents amino acids or very similar amino acids which are present in 6 of the 7 RZF sequences at each position. Capitalized residues are those that are in the consensus sequence.

```
                                 1                                                      46
SEQ ID NO:32 hiap2       EqlrrlqEer tCKVCMdkev sVvFiPCGHl vvCqeCApel rkCPiC
SEQ ID NO:33 hiap1       EqlrrlpEer tCKVCMdkev sIvFiPCGHl w CkdCApsl rkCPiC
SEQ ID NO:34 m-xiap      EqlrrlqEek lsKICMdrni aIvFfPCGHl atCkqCAeav dkCPmC
SEQ ID NO:35 xiap        EqlrrlqEek lCKICMdrni aIvFvPCGHl vtCkqCAeav dkCPmC
SEQ ID NO:36 diap        EenrqlkDar lCKVCLdeev gVvFlPCGHl atCnqCApev anCPmC
SEQ ID NO:37 Cp_iap      EkepgveDsk lCKICyveec iVcFvPCGHv vaCakCAlsv dkCPmC
SEQ ID NO:38 Op_iap      aveaevaDdr lCKICLgack tVcFvPCGHv vaCgkCAagv ttCPvC
SEQ ID NO:1  consensus   E------E-- -CKICM---- -V-F-PCGH- --C--CA--- --CP-C
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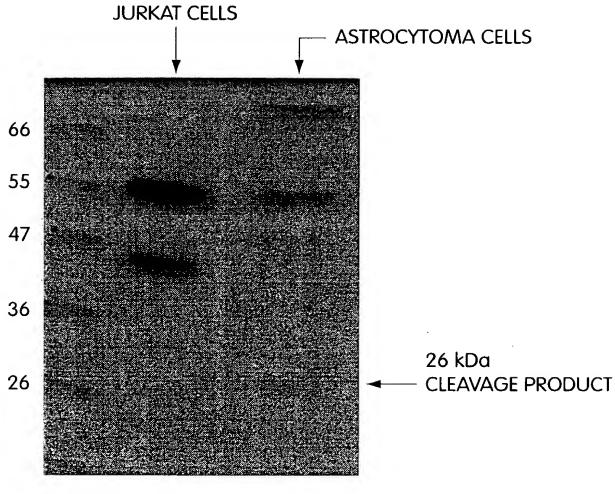
Fig. 9

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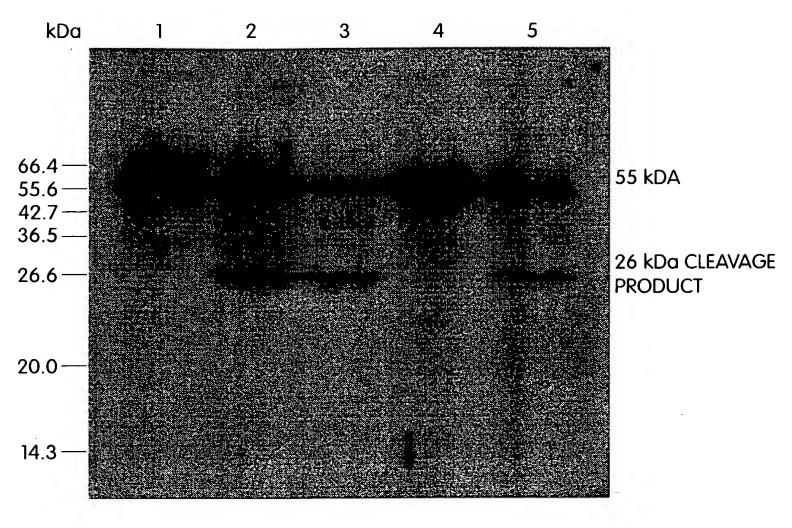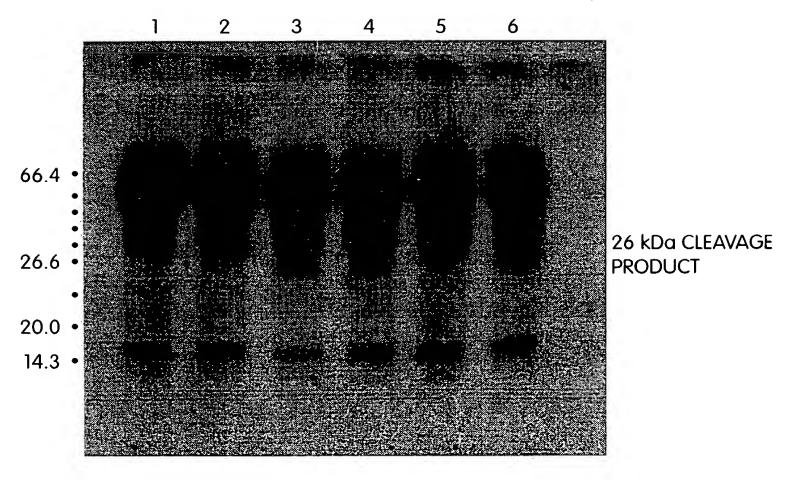Page 48 of 61   Customer No.: 21559

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Fig. 10A

Fig. 10B

Fig. 10C

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Fig. 11A

Fig. 11B

Fig. 11C

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Fig. 12A

Fig. 12B

Fig. 12C

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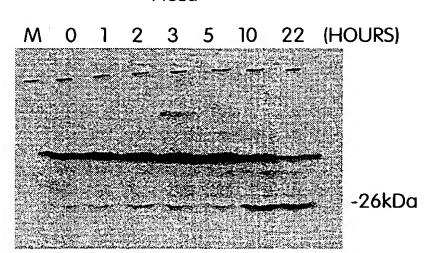Page 51 of 61_____   Customer No.: 21559

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Fig. 13A

Fig. 13B

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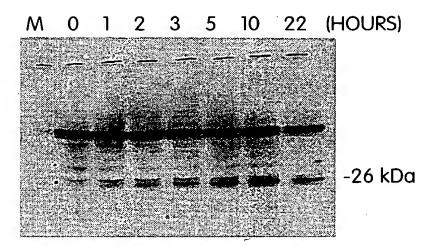
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Fig. 14A

Fig. 14B

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Fig. 14C

Fig. 14D

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CHO DEATH ESSAY

Legend:
- Bcl-2
- RZF
- pCDNA3
- CHO
- BIR
- xiap
- miap

X-axis: HOURS (12, 24, 48, 72, 96)

Y-axis: PERCENTAGE OF VIABLE CELLS (0%, 20%, 40%, 60%, 80%, 100%, 120%)

Fig. 15A

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
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Client/Matter No.: 07891/003005
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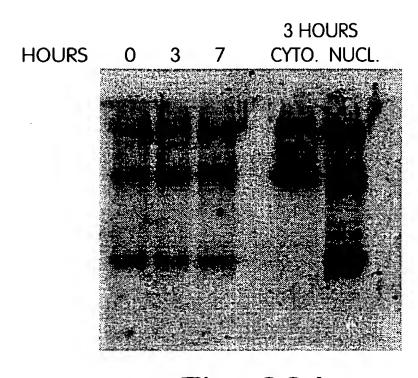Page 55 of 61   Customer No.: 21559

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CHO TRANSIENT DEATH ASSAY

□ CHO
🮑 Bgal
□ pCDNA3
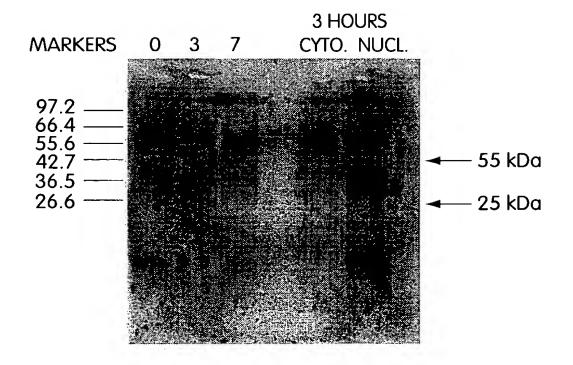▨ xiap
▨ xiap D1
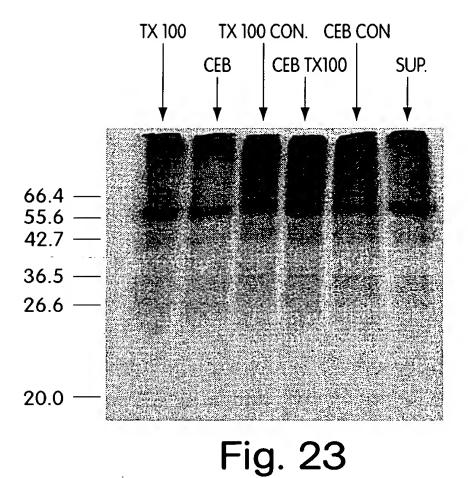◨ xiap D2
◧ xiap D3
⊞ xiap DRZF

Fig. 15B

Title: MAMMALIAN IAP GENE FAMILY, PRIMERS, PROBES ...
Applicant(s): Robert G. Korneluk et al.
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**DEATH ASSAY
(STABLE CHO+10 μm MENADION)**

Fig. 16A

**DEATH ASSAY
(STABLE CHO+20 μm MENADION)**

Fig. 16B

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Applicant(s): Robert G. Korneluk et al.
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Fig. 17

Fig. 18

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Fig. 19

Fig. 20

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HeLa

M   0   1   2   3   5   10   22   (HOURS)

-26kDa

Fig. 21A

Jurkat

M   0   1   2   3   5   10   22   (HOURS)

-26 kDa

Fig. 21B

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Fig. 22A

Fig. 22B

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Fig. 23